(ECA/POP/TP/89/2(I.3))

UNITED NATIONS

ECONOMIC COMMISSION FOR AFRICA

LC/NAIROB

THE IMPACT OF MATERNAL AND CHILD HEALTH AND FAMILY PLANNING (MCH/FP) PROGRAMMES ON FERTILITY, INFANT AND CHILDHOOD MORTALITY AND MATERNAL HEALTH

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I. INTRODUCTION

1. All African governments are greatly concerned about infant, childhood and maternal health problems. They would like to reduce infant, childhood and maternal mortality as well as morbidity. Africa has the highest infant and childhood mortality, as well as maternal mortality among the regions in the world. With regard to fertility, not all of the governments are interested to intervene and moderate the levels. However, many African Governments are now advocating family planning for reasons of spacing of births as this has an impact on the health of the mothers and children. It will be noted that the World Population Conference in Bucharest in 1974, indicated that reduction of infant and child mortality, particularly through improved nutrition, sanitation, maternal and child health, and maternal education, was one of the six developmental goals that tend to moderate fertility levels.(1) In 1978, the Alma Ata International Conference on Primary Health Care declared that maternal and child health and family planning (MCH/FP) was one of the components of primary health care.(2) This has further been emphasized in the Health For All by the year 2000.

2. The Kilimanjaro Programme of Action on Population (KPA) also addressed the problem of infant, child and maternal health by calling on African countries to intensify national programmes to reduce high levels of infant and childhood and maternal mortality and morbidity. The programmes include MCH/FP. The KPA also called on countries to recognize, (i) that a substantial decline in infant and childhood mortality was a prerequisite for fertility decline; (ii) the usefulness of family planning and child spacing on the stability and wellbeing of the family.(3) The International Conference on Population (ICP) in 1984 also reiterated that improved health was one of the essential elements that contribute to reduction of fertility levels.(4)

3. Furthermore, the ICP called on governments to: reduce maternal morbidity and mortality at least by 50% by the year 2000 where maternal mortality is higher than 100 per 100,000 births; provide prenatal and perinatal care, with special attention to high-risk pregnancies, and ensure safe delivery by trained

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(1) United Nations: United Nations World Population Conference, Action taken at Bucharest, para 32.

(2) WHO and UNICEF, Primary Health Care, Geneva, and New York, 1978

(3) United Nations Economic Commission for Africa, Kilimanjaro Programme of Action on Population, 1984.

(4) United Nations, Report of the International Conference on Population, 1984, recommendation 35

attendants, give special emphasis to nutrition needs of pregnant women and nursing mothers; help women avoid abortion; support family planning as a health measure in maternal and child health programmes as a way of reducing births that occur too early or too late in a mother's life, as well as to increase birth intervals; encourage community education to change prevailing attitudes which counternance pregnancy and childbearing at young ages as pregnancies to both married and unmarried adolescents has adverse effects on the morbidity and mortality of both mother and child(5). It is worth noting from data on the 1987 sixth United Nations Inquiry on Population that among the 25 ECA member States who had responded, 21 of them indicated that their fertility was too high; 23 were implementing measures with regard to family planning whereas all were implementing measures on MCH.

4. What has been said above centres on the impact of MCH and FP programmes on fertility, infant, childhood and maternal health. At this stage it might be appropriate to indicate the focus of MCH/FP programmes. MCH programmes are concerned with the health problems of mothers and children (eg. nutrition, infectious & communicable diseases, hazardous and excessive reproduction). These programmes deal with the biological demands of human reproduction, growth and development, the vulnerability of mothers and children. Maternity care ensure that expectant mothers maintain good health, normal delivery and care of child health. In addition, maternal care help women even before pregancy to understand family life education. Family planning programmes have the main objective of enhancing practice of modern fertility control or regulation in the sense of spacing births as well as limiting family size. These methods of modern contraception include use of pills, intra-uterine devices (IUDs), condoms and sterilization. MCH and FP programmes have certain common elements like encouraging spacing of children to improve the health of mother and child; education and communication motivation for the good health of mothers and children. Consequently most African countries are integrating MCH/FP programmes as such an arrangement enables better utilization of resources in resolving health problems of mothers and children(6)

5. There has been recent effort to sensitize the importance of MCH/FP programmes in improving the lives of mothers and children as reflected in the convening of two international conferences: (i) One on safe motherhood in Nairobi in Kenya in February 1987, (ii) the other on Better Health for Women and Children through Family Planning, convened also in Nairobi, in October 1987. MCH/FP programmes also have influence on

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(5) Ibid. recommendation 18.

(6) Economic Commission for Africa: "Report on Integrated Maternal Child Health/Family Planning Programmes in Africa" document ECA/POP/WP/87/3[1.3(ii)], August 1987, p.19 and also see Table 2 in the Annex of that report.

fertility. There is generally less dispute that MCH/FP have an impact on improving the health of children and mothers through reduction of mortality and morbidity. However, the problem that raises questions is the measurement of the reduction in infant, child and maternal mortality that would be attributed to MCH/FP programmes. Similarly it is difficult to measure the amount of reduction in fertility associated with the implementation of MCH/FP programmes. One of the problems of impact measurement arises from the fact that (a) MCH/FP programmes do not operate in isolation of other socio-economic and cultural variables which also have an impact on the health of mothers and children and on fertility; (b) there are no easy methodologies that can easily be used to disentangle the net impact of a number of variables all operating at the same time; (c) the third difficulty relates to data constraints - data on demographic trends are scanty; statistical data on performance of MCH/FP programmes are virtually non-existent.

6. Some isolated studies have been done by individual researchers and institutions on impact of MCH/FP on fertility, infant, childhood and maternal health in Africa. However, more studies have been done in Asia on impact of family planning programmes on fertility. This study draws out of such research, to give empirical evidence or any proxy indications that would encourage policy makers and programme managers to implement strong MCH/FP programmes. The study is being undertaken to implement one of the approved activities of the 1989 work programme under programme element 1.3. In section II the paper treats methodological problems in measuring impact of MCH/FP programmes; section III examines fertility and the impact of MCH/FP on it; section IV discusses infant and childhood mortality and maternal health and the impact of MCH/FP on them; section V presents summary and policies for consideration by ECA member States.

II. METHODOLOGICAL PROBLEMS IN MEASURING IMPACT OF MCH/FP PROGRAMMES

7. The available documented methods for measuring the impact of family planning programmes on fertility are those by the United Nations in various publications including Manual IX of 1979 published as Population Studies No. 66; addendum to Manual IX published in 1986; and other similar publications. There are no documented methodologies to measure impact of MCH/FP programmes with regard to infant and child mortality and maternal health as was done with fertility. However, some of the methods relating to measuring impact of family planning programmes could, with modifications, be applied to measure impact of MCH/FP programmes on infant and child mortality and maternal health. In a study by ECA in 1987, an attempt was made to examine problems in evaluating family planning, maternal and child health programmes

in Africa (7). The methods reviewed in that study were those intended to measure the impact of family planning programmes on fertility. The methods covered were: Standardization approach; fertility projection/trend analysis; standard couple-years of protection; component projection approach; reproductive process analysis; regression analysis; experimental design; and prevalence method. Since these methods have been described in detail in the UN publications with illustrations of application, only a description of these methods and their problems are presented below based on the earlier study referred to above.

(a) Standardization Approach Method

8. In this method, crude birth rate is compared for a given country or area at 2 or more points in time. The comparison is undertaken by using a selected standard population to which the observed rates are compared and through controlling the various components of change of the crude birth rate one at a time. This helps to indicate the magnitude of the contribution of each component to the crude birth rate. The components used are proportions of women of reproductive ages in the total population, age structure of women of reproductive ages, proportion of married women of reproductive ages, and marital age-specific fertility rates. The standardization determines the contribution of these four demographic components to changes in magnitude of the observed crude birth rate. In evaluation, the method can be made to yield an estimate of the change in the crude birth rate that is attributable to changes in marital fertility. The role of marital fertility and the changes brought about by this variable may then be attributed to the family planning programme, if evidence is sufficient to warrant such a conclusion. The method is explained in detail with illustrations in Chapter I of Manual IX.

9. Among the advantages of this method are: simplicity in use of the method, data on crude birth rate or general fertility rate are not as difficult to obtain. The problems of the method include (8): (a) the impact of the family planning programme on fertility cannot be directly assessed as the standardization

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(7) Economic Commission for Africa: Methodological Problems in Evaluation of Family Planning Programmes in Africa, ECA/POP/TP/87/3[1.3(i)] July 1987

(8) United Nations, The Methodology of Measuring the Impact of Family Planning Programme on Fertility, Manual IX, Population Studies, No. 66, New York 1979, p. 7.

does not go beyond to specifically indicate what change is due to effect of marital fertility; hence it cannot determine what part of the decline, if any, in marital fertility is due to socio-economic factors and what part to the programme activities. More analysis would be needed to ascertain what link may exist between programme acceptors and fertility reduction; (b) the method is limited also by the fact that it assumes that the components for which standardization is performed are independent of one another; (c) the estimates of change determined from standardization are primarily hypothetical information, based on specific assumptions regarding the components chosen and the population selected at a point of reference.

10. Although the standardization method was designed to attempt to measure the impact of family planning programmes on fertility, it can also be extended for same application in integrated MCH/FP programmes. The problems of attributing change in fertility due to the MCH/FP programmes with any certainity will still remain unresolved.

(b) Fertility Projection/Trend Analysis Method

11. This method extrapolates the fertility trend prior to the date of the beginning of the family planning programme and compares that trend with the fertility trend after the beginning of the progrmme. This method requires a series of annual crude birth rates for the period before the programme as well as a series after the programme has started. The linear trends are established by making use of the least squares techniques. This method is illustrated in the UN Manual IX. The programme impact of family plannining is the difference between the observed trend in fertility and the one that has been extrapolated.

12. Data constraints may render it difficult to use this method in many African countries. One of the main difficulties of this method is the choice to be regarded as the effective date of beginning of the family planning programme as pointed out by Chan (9) and Nortman (10). Another problem is that the

(9) Chan, K.C. "Application of Methods of Measuring the Impact of Family Planning Programmes: The Case of Hong Kong" in United Nations Population Studies No. 76, Evaluation of the Impact of Family Planning Programmes: Source of variance, New York 1982, p.48.

(10) Nortman, Dorothy L. "A Critique of the Methodologies to measure the Demographic Impact of Family Planning Programmes in United Nations Population Studies 87 on Studies to Enhance the Evaluation of Family Planning Programmes, p. 34.

extrapolated linear trend obtained using the least quare method fails to recognize the post programme accelerating decline in fertility deriving from social and economic developments other than the programme (11).

(c) Standard Couple-years of Protection Method

13. This method attempts to estimate the number of births that will be averted in a given year and subsequent years by the programme supplies and services provided in a given year. This is converted into a single figure expressed as the number of couple years of protection offered by the programme.

14. The data required to use this method to calculate programme achievement are as follows (12).

- Distribution of acceptors by method and age of wife at acceptance
- Acceptors by open interval at acceptance
- One-month and 12-month (or similar pair of observations) continuation rates for semi-permanent methods of contraception
- "Wastage" proportions of recurrent methods of contraception together with an estimate of continuation rate at least at one point in time
- Quantities of recurrent contraceptives provided to intending users
- Age-specific marital fertility rates
- Proportions of births that are first births by age of mother
- Age-specific mortality rates or, preferably, recent mortality life table

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(11) Norman, Dorothy L. "A Critique of the Methodologies to measure the Demographic Impact of Family Planning Programmes" in Population Studies 87, op.cit, p.34.

(12) UN, Manual IX, op.cit. p. 42.

- Mean duration of post-partum amenorrhea
- Age-specific mean duration of post-partum amenorrhea
- Pregnancy rates by method and age
- Ages of husbands of sterilization acceptors at acceptance
- Age-specific prevalence of female sterility
- Contributions of foetal loss to duration per birth by age of womam
- Proportion of (diagnosable) pregnancies preceeding to live-births by age of mother.

15. Details on the application of the method are presented in UN Manual IX. In most African countries this method would not be used due to difficulties to obtain the required data. It has been attempted, however, in Mauritius and the data problem mentioned was experienced; consequently some data had to be borrowed from some standard tables developed for this (13). The method has also been applied to the data of Tunisia where the defects in the basic assumptions on effectiveness of contraception and difficulties of obtaining the required data in developing countries were stressed as weakness in the application of the method (14). The method is also somehow difficult to apply. Similar problems have been noted in application of the method in Malaysia, Mexico and Thailand as indicated in UN Population Studies No. 76.

(d) Component Projection Approach Methods

16. These methods are treated in Chapters III and IV of UN Manual IX as component projection approach 1 (also known as converse) and component projection approach II respectively. These methods also attempt to estimate the number of births that will be averted in a given year through the use of programme supplies and services.

(13) UN Population Studies No. 76, op.cit, p. 97

(14) Ibid p. 247

17. Approach I has been computerized as a one-sex, age-component population projection model that survives an initial population every year over an interval of 5 or 10 years based on assumed mortality schedule. Births are projected annually under a natural fertility schedule which is modified by contraceptive practice. Subtracted from the annual births expected under the natural fertility schedule are births averted by programme acceptors, calculated as a product of the annual couple-years of protection experienced by acceptor cohorts and natural fecund fertility (15).

18. Problems that have been cited against component projection approach I include (16): (a) the method deals too crudely with contraceptive prevalence at the beginning of the projection period; (b) the weakness in the assumption that at all contraceptive prevalence levels, programme acceptors and users are fecund, thereby averting births in accordance with natural fecund fertiltiy, which is greater than natural fertility. At high prevalence levels this assumption may not be warranted, in which case birth averted are overestimated; (c) the method does not allow for the ineffectiveness of contraceptive method. In the context of African situation, the data requirements make this method rather unsuitable for application in many countries. However, it has been used in Tunisia where most of the relevant data were available for the period 1966 to 1976 (17). The method was found to be useful. Elsewhere the method has been applied to the data of Costa Rica, Mexico, the Republic of Korea, Thailand and Sri Lanka. In the case of Mexico it was indicated that the method could be considered a very complete and efficient for estimating programme impact. It permits one to obtain significant results in a straight forward way, perhaps limited by the availability of data (18). In the Republic of Korea the method was found to be useful because it provides programme administrators with the information needed to explain the effects of activities. Not all the parameters required for the model were available, as a result estimates and assumptions had to be made. The results obtained were found to be inconsistent with observed data in cases where a comparison could be made. Hence it was difficult to accept the outcome uncritically as being valid in the case of the Republic of Korea (19).

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(15) UN Population Studies No. 87, op.cit, p. 34

(16) Ibid pp. 34-35

(17) UN Population Studies, No. 76, op.cit, pp. 234-240

(18) Ibid p. 136

(19) Ibid p. 169

19. The component projection approach II estimates the births averted in a given calendar year through the use of birth regulation methods provided by a family planning programme. This method was designed for use of desk calculators. In applying the method estimates have to be made of (a) users of a given family planning method; (b) potential fertility which is computed as an average of the acceptors' own fertility prior to acceptance. The number of births averted is the product of number of users of a specified family planning method and the corresponding potential fertility rate for each group. The data demands for application of the method are quite heavy, i.e. programme statistics must be available. The calculations involved are laborious. Most African countries would not have the data needed for application of this method.

(e) Reproductive Process Analysis

20. This method is described and illustrated in Chapter V of UN Manual IX. It attempts to estimate the number of births that will be averted in one year or more by specific contraceptive methods provided by the programme. The method requires programme statistics data on method-specific acceptance rates ususally IUDs, demographic data on age specific marital fertility rates, number of births to married women. Life table techniques are applied to calculate continuation rates for programme specific methods. Estimates are made on increase in birth interval due to contraception. Finally calculations of births averted per year per acceptor for each method are estimated.

21. This method was applied to data for Tunisia. The results indicated that the method is not easy to apply and calculations are lengthy (20). Lack of reliable programme statistics especially continuation rates by age groups makes this method rather unsuitable for use in most African countries. Furthermore, the method does not account for other influences on birth intervals, such as sterility and postpartum amenorhea.

22. In Malaysia the method was found to be conceptually powerful in assessing objectively the gross births averted, particularly when used concurrently to several subsamples (21). It was also observed in application of the method to the data of Mexico that the method can be considered the clearest conceptualization to analyse demographic impact of contraceptive use, but it is seriously limited when applied to the specific activities of family planning programmes. The main reason is that birhs averted are not referred to any specific calendar year nor to a cohort of acceptors of the method entering the programme during the year, thus reducing the possibilities of assessment of the

(20) UN Population Studies No. 76, op.cit p.255

(21) Ibid p.85

impact of contraceptive activities (22). The conclusion on application of the method to the data of the Republic of Korea was that the gross births averted estimate provide very useful guides for administrators to plan and implement the progamme, as well as to evaluate the programme effects (23). This was reiterated in the case of Thailand, however, it was pointed out that the lengthy and complicated computation evidently makes the technique less desirable (24).

(f) Regression Analysis Method

23. The method is described and illustrated in Chapter VI of UN Manual IX as the Multivariate Areal Analysis method. This method, unlike the others presented so far, attempts to specifically infer the role of all other variables included in the analysis. A large range of explanatory variables can be used in this method and in evaluating family planning programme it permits the handling of both programme and non-programme factors. In evaluating the programme impact on fertility, a fertility indicator becomes the main dependent variable; socio-economic, demographic and possibly biological factors, as well as programme indicators, constitute the independent variables. The programme impact is thus assessed directly through the regression parameters. The unit of analysis is an areal subdivision of a country. The estimation of the regression parameters can be carried out through various procedures which vary generally with the regression model.

24. With the heavy data demands (demographic and ecological, socio-economic and related variables, and family planning programme characteristics) this method would be difficult to apply on areal units in the African context due to the fact that the relevant data would not be available. A strong correlation between independent variables can make interpretation of results difficult. The results in application of the method are likely to vary with changes in the conceptual model, the operational definitions and the techniques of estimation. The method has been used to the data of Hong Kong, Mexico, Colombia, Costa Rica, Pakistan and Sri Lanka. It is worth noting that the data constraint as pointed above has been one of the problems referred to in some of these countries.

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(22) Ibid pp. 142-143

(23) UN Population Studies No. 76, op.cit p. 165

(24) Ibid p. 136.

(g) Experimental Design Methods

25. Chapter VIII of United Nations Manual IX describes and illustrates these methods. The main feature of experimental design methods is to compare two or more groups which are given progamme services to varying degrees of services and supplies; one of the groups is supposed to be a control group - a group that does not receive any of the programme services. After administration of the experimentation of the experiment over a period of time the difference in levels of fertility are generally attributed or indicated to be due to the programme. The key requirement is random assignment of experimental units to treatment groups, prior to initiating treatment. When randomization cannot be done by definition, the study is quasi-experimental.

26. The experimental design methods use programme statistics and demographic data. The analysis is generally difficult. It is rather difficult to apply experimental design approach on a large scale. These methods pose serious political and ethical questions of withholding services to the population. In actual practice the control groups may also be exposed to the programme services and thus dilute the results. In and out migration in the project areas may be one of the problems in experimental design approach.

(h) Prevalence method

27. This method is presented in the United Nations Addendum to Manual IX in Chapter II. It estimates the number of births averted as well as reduction in the crude birth rate that results from the programme contraception. In the absence of programme statistics, surveys like the contraceptive prevalence surveys (CPS) or the World Fertility Survey (WFS) would easily collect the data needed. However, poor survey data or out of date data would make the results unreliable.

28. The data required for application of this method are: contraceptive prevalence (i.e. proportion of married women currently using contraception by age and method for both the programme and non-programme sectors, at the beginning of the year; observed age-specific fertility rates; number of women in each five year age group from 15-19 to 45-49; use-effectiveness of different contraceptive methods, age-specific proportions of fecund women and total population size. In application of the method the following estimates are derived: natural fertility that would prevail in the absence of contraception; potential fertility (level of fertility that would prevail in a population if all programme users stopped conttraception), fertility impact of programme use, births averted, birth rate impact and method-specific results. It should be noted that from three fertility

rates namely observed fertility, potential fertility and the natural fertility, one would derive the fertility impact of programme contraception and fertility impact of non-programme contraception. The fertility impact of programme contraception is the difference between potential fertility and observed fertility while fertility impact of programme contraception is the difference between potential fertility and observed fertility and fertility impact of non-programme contraception is the difference between natural fertility and potential fertility.

29. The prevalence method has been recommended on the basis of its simplicity and straightforwardness as an alternative to the other existing methods for estimating the gross fertility impact of programme contraception. Moreover the data requirements can easily be obtained from national surveys (25).

Summary of the Methods and Criteria for Selecting the Appropriate Method

30. In summary, this section has made reference to various methodologies developed for measuring the impact of family planning programme on fertility without going into details of their application. The methods can be applied to measure the same impact on fertility in integrated maternal and child health and family planning programmes bearing in mind the limitations of the methods. In the African context most of these methods are difficult to use due to problems of lack of required data as well as complexity of most of the methods. These methods on evaluation are not known in most of African countries. The fact that most African countries have recently become interested in family planning programmes also explains why there has not been much use of the methodologies which are also still recent. There is need to improve on these methodologies to take into account the changing situations whereby attention is being given to integrated programmes of family planning and MCH as was recommended by the Second Expert Group on development of methodologies on measuring the impact of family planning programmes on fertility; this was then reiterated by the Third Expert Group Meeting on the same subject held in 1982 (26).

31. In a review of application of some of the methods cited above in the last 10 years, it was noted that some of the methods

(25) United Nations: Population Studies, No. 66, Addendum, Manual IX. New York, 1986, p. 14.

(26) United Nations, Population Studies No. 87, op.cit., p. 21.

have not been widely used (27). Those that have been used were applied mostly in Asian countries. Here again, complexities of the methods and demanding data requirements were among the reasons for non-use of some of the methods.

32. After having made a presentation of the various methods developed for the evaluation of family planning programmes impact on fertility it is not possible to advocate any of the methods as the most satisfactory method. It would be ideal, however, to apply as many different methods as possible and compare the results. It is clear that one of the criteria to be used in selecting any method is governed by the availability of relevant data required. If the data needed for evaluation cannot be met for any given method then that method cannot be applied. As many of the methods of evaluation compare the demographic situation before the family planning programme and the period after the programme has been in existence for some time, it is essential that information on fertility levels and prevalence of family planning practice, proportion of married women, marital fertility, etc. be measured before the programme and after the programme. Thus the statistical data for evaluation is a crucial criteria in selection of the method to use. The second criteria to be considered is whether a given method is easy to use in a given country. While some methods can easily be used, others are quite difficult to use as seen earlier. Training of personnel and availability of computation facilities would be necessary to overcome this problem. A third criteria should be the examination of the assumptions inherent in a given method if they are plausible.

(27) John A. Ross and Cynthia B. Lloyd, "Methods for Measuring Programme Impact: A Review of Application in the last Decade". Paper presented at an IUSSP Seminar on the Role of Family Planning Programmes as Fertility Determinant, held in Tunis, 26-30 June 1989.

III. FERTILITY

(a) Levels and Trends

33. Total fertility rate (TFR) has remained high in Africa since 1950 when the rate was 6.6 children per woman while as the rate for the world as a whole was 5 children per woman; 2.8 for the more developed regions and 6.2 for less developed regions (see table A below). For the period 1985-1990 total fertility still remain about 6 children, i.e. 6.2 per women. This represents a decline of 6% only since the 1950s. It is during 1995-2000 that total fertility is expected to be below 6 but still close to 6. Throughout the period 1950-2000 Africa continues to have the highest fertility levels. Current fertility levels for Africa are about 3.3 times the level for the more developed regions, and about 1.8 times the level for the world as a whole. On sub-regional level, for the period 1985-1990, Western and Eastern Africa show highest fertility levels of 6.8 and 6.7 respectively compared to 4.7 in Southern Africa, 5.3 in Northern Africa and 6.0 in Middle Africa.

Table A: Total Fertility Rate in Africa in Comparison with More Developed and Less Developed Regions

A R E A	1950-55	1985-90	1995-2000
East Africa	6.7	6.7	6.4
Middle Africa	5.9	6.0	5.7
Northern Africa	6.8	5.3	4.2
Southern Africa	6.5	4.7	4.1
Western Africa	6.7	6.8	6.4
Total Africa	6.6	6.2	5.7
World	5.0	3.4	3.1
More Developed Regions	2.8	1.9	1.9
Less Developed Regions	6.2	3.9	3.5

Source: United Nations, World Population Prospects, 1988, Medium Variant, New York, 1989.

34. It would be more meaningful to examine levels and trends on individual countries within the sub-regions based on censuses and surveys. Unfortunately many countries do not have time series data. Even where data is available for at least 2 or more points in time, the quality of data is not always reliable for analysis of trends. Table 1 in the Annex shows data on total fertility for selected countries for which such data was available for at least 2 points. It must be pointed out that trends analysis based on 2 points may be misleading and dangerous. It would be desirable to have longer time series for meaningful results, but this is lacking.

35. In Eastern Africa, based on data in Table 1, current total fertility rates, among the 12 countries, are above 7 in Burundi, Kenya, Malawi, and Rwanda; the rates are between 5.7 and 7 in Ethiopia, Mozambique, Uganda, Tanzania, Zambia and Zimbabwe. Only Mauritius and Seychelles show very low rates of 2 and 3.3 respectively as of 1985. These are also the only small island countries with consistent and significant decline in fertility trends between the 1970s and 1980s. Zambia, too, shows decline in fertility between 1969 to 1980 from 6.9 to 5.7. Preliminary data from the 1988 survey also show that total fertility is declining in Zimbabwe. There seem to be indication that fertility has been rising in some countries including Burundi, Malawi, and Tanzania (Mainland). In the other countries it is difficult to discern any definitive trends due to small differences or to fluctuations or because data is just for two points.

36. In Middle Africa, data on Cameroon show increase in total fertility from 4.6 in the early 1960s to 6.4 during 1975-78. Improvement in health especially in connection with diseases responsible for lower fertility seem to be part for the explanation for fertility increase. In the case of the Congo, it seems fertility has not changed much at slightly above 5 since the 1960s. There is substantial sub-fertility and in-fertility in parts of Congo.

37. In North Africa, fertility is above 6 in Libya and Sudan. The rates are below 6 in Algeria, Egypt, Morocco and Tunisia. Fertility has been declining in all countries in this sub-region except in Libya and Sudan. In Sudan total fertility remained constant between 1973 and 1979. In Southern Africa total fertility in Botswana in 1971 was 6.5 and slightly declined to 6.2 in 1981 but went up again to 6.5 in 1984. However, preliminary results from the 1988 survey show a decline in fertility to 5.0 for the period 5 years before the survey. With regard to Swaziland, there was a slight increase fertility from 5.2 in 1966 to 5.7 in 1976.

38. It is observed that in West Africa, there are signs of total fertility increase in Côte D'Ivoire and Nigeria. In the Gambia, Ghana and Togo fertility remained unchanged between the 1970s and 1980s. Fertility has also remained unchanged in Mali at above 7 since the 1960s. In Senegal total fertility increased

from 6.4 in 1976 to 7.2 in 1978 and went down to 6.6 in 1986. As for Liberia, total fertility rose from 5.7 in 1971 to 6.7 in 1974 and remained at almost the same level, 6.5, in 1986.

(b) Factors Affecting Fertility

39. It has been shown above that fertility levels in Africa as a whole are, indeed, very high and they have remained high since the 1950s. There are a number of factors which have sustained the high levels in fertility. These include: social and cultural values towards early marriages and large family size; little contraceptive use coupled with erosion in cultural values supporting prolonged breast feeding and sexual abstinence for a nursing mother; women's education and improved status and improved health conditions; infant and child mortality; religion. An earlier study by the Economic Commission for Africa made detailed examination of such factors influencing fertility (28). Consesquently there is no need here for detailed presentation of factors affecting fertility.

40. The African social and cultural values encourage early marriage and early commencement of childbearing for women; moreover, childbearing continues till the end of a woman's reproductive period. In some countries, according to World Fertility Survey (WFS), women marry as early as age 15. The proportions of women married by age 15 in Cameroon and Senegal for example are 21% and 28% respectively (29). By age 20, the majority of the women are married. The impact of early marriage with little or no contraceptive use in Africa is to increase fertility. Delayed marriages are known to have a depressing effect on fertility, but African cultures frown at those who do not marry early. The desired average size of the family is very high in most African countries as shown in Table B, i.e. about 6 to over 8 children. Among the countries not included in Table B where desired average family size is below 5 include Egypt, Morocco, Mauritius, Seychelles and Tunisia.

41. Although the majority of women want large family size,recent surveys indicate that some women would like to reduce their fertility or have no more children. The Botswana Family Health Survey conducted in 1984, for example, indicated that about 30% of women in union aged 15-49 wanted no more children. Similar surveys conducted in Kenya in 1984, Senegal in 1986, Zimbabwe in 1984 show figures of 32%, 19% and 25% respectively. Distribution by age group for Kenya show that 3.8% of married women aged 15-19

(28) Economic Commission for Africa, "Social, Cultural and Legislative Factors Affecting Family Formation and Fertility in Selected African Countries" doc. ECA/POP/TP/88/2/(2.2), October 1988.

(29) Ibid, p.28.

did not want more children in 1984. Figures for other age groups were 10.7% for age group 20-24; 23.4% for age group 25-29; 45% for age group 30-34 and 53.7% for age group 35-39.(30) Unfortunately, contraceptive use in most African countries is very low as shown in Table 2 in the Annex. The only countries with contraceptive rates of 20%, or above during 1981-85 were: Benin 20%, Botswana 29%, Egypt 30%, Mauritius 75%, Morocco 27%, Tunisia 42% and Zimbabwe 40%. In the majority of the countries the rates are below 5%. Low contraceptive use coupled with decline in traditional cultural norms that prolonged breast feeding, birth intervals and sexual abstinence for nursing mothers all contribute to maintain high fertility levels. Prolonged breast feeding has been found to inhibit on average about 4 births per woman in Africa(31). Among those using contraception in Africa, about 75% are doing so for reasons of spacing births.

42. It is worth noting that recent survey data between 1986 and 1988 show increase in contraceptive use to the following levels: Algeria 38.6% in 1986; Botswana 32.9% in 1988; Egypt 37.6% in 1988; Ghana 12.8% in 1988; Tunisia 49.7 in 1988; Uganda 5.5% in 1988; Zimbabwe 43.1% in 1988(32). In Algeria, 25.1% of contraceptive users use the pill. The methods used in Botswana include female sterilization 4.3%, pill 14.7%, injectable 5.5% IUD 5.6%. The methods commonly used in Tunisia are IUD 17%, female sterilization 11.5%, pill 8.8%, rhythm 6.3%. In Egypt the pill and IUD are equally popular as methods of contraception accounting for 15% each. In Zimbabwe the pill is the most popular method - 31%, this is followed by withdrawal 5.1%, female sterilization 2.3%, IUD and condom 1.1 and 1.2 respectively.

43. It has been shown through various research studies, that a woman's level of education, improvements in her status and availability of adequate health care, all have depressing effects on fertility. Significant impact of education is felt from secondary and higher education. Women with no education in Benin, Morocco, Senegal and Sudan have 2 to 3 more children than those women who have 7 or more years of education based on the WFS data analysis. In Tunisia, a woman with University

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(30) Kenya Central Bureau of Statistics, Ministry of Planning and National Development: Kenya Contraceptive Prevalence Survey 1984, First Report.

(31) Shyam Thap, Roger V. Short and Malcolm Potts, "Breast feeding, birth spacing and their effects on child survival" in Nature Vol. 335, No. 6192, 20 October 1988, pp. 679-682.

(32) United Nations Population Division, New York, (information from data bank as of 15/5/89).

education has about 2.6 children while an illiterate woman has an average of 6.9 children.(33) A study on sexual behaviour, contraceptive practice and health among young unmarried population in Ibadan, Nigeria, between 1981 and 1982 revealed that secondary students wanted 5.8 children where as university students wanted about 4.3 children.(34) Education, especially beyond primary level, influences fertility through delaying entry into marriage; it also influences perceptions of the women to change their attitudes to accept the advantages of smaller family size and hence use of modern family planning methods to regulate fertility. Improvements in women's education also helps women to improve their economic and social status all of which contribute to modify fertility trends as childbearing and the demands of women in their higher social positions and status seem to be incompatible.

44. It has been argued that reduction in mortality, especially that of infants and children is a necessary pre-requisite for fertility decline. The demographic transition theory from high to low fertility is related to this. Generally under conditions of high infant and childhood mortality, couples cannot opt for smaller family size. Thus fertility would be very high to ensure survival of a certain number of children to adulthood. Since the early 1950s to the present, infant mortality rate has declined by about 43% and crude death rate has declined by about 45%. However, fertility has barely changed much. Any improvements in infant and child survival should be accompanied by changes in attitudes towards smaller family size among African countries before changes in lower fertility can be expected. Even after favourable attitudes are achieved to lower fertility, the population would need to be provided with the means to regulate and reduce fertility. Elsewhere outside Africa, decline in infant and child mortality and mortality in general has been followed by decline in fertilty. In France and U.S.A., fertility decline started before or simultaneously with mortality decline. It would appear that this was trigered by massive economic and social changes which shifted the demand for children downward (35). It is worth noting that decline in mortality is not always a necessary condition for fertility decline. Other factors would also need to change eg. cultural and socio-economic in the case of Africa. However, high mortality rates especially infant and child mortality dc keep fertility at high levels.

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(33) IDRC Reports, Vol. 16, No. 3, July 1987, p. 18; also IPPF Open File of 19/9/87, p.18.

(34) Pathfinder Fund, Early pregnancy and childbearing in Guatamala, Brazil, Nigeria and Indonesia: Adddressing the Consequencies, No.11, September 1984, p.11.

(35) Susan H. Cochrane and K.C. Zachariah, Infant and Child Mortality as a Determinant of Fertility: The Policy Implications, World Bank Staff Working paper No. 556, 1983, p.3

Table B. Desired Family Size, by country 1977-87

Country	Date	Average Desired Family Size[a]
Benin	1981-2[d]	7.6
Botswana	1984[e]	5.9
Burundi	1987[f]	5.9
Cameroon	1978[d]	8.0
Côte d'Ivoire	1980-1[d]	8.4
Ghana	1979-80[d]	6.0
Kenya	1977-8[d]	7.2
Kenya	1984[e]	6.2
Lesotho	1977[d]	6.0
Liberia	1986[f]	6.0
Mali	1987[f]	-
Mauritania	1981[d]	8.8
Nigeria	1981[d]	8.2
Rwanda	1983[g]	6.3
Senegal	1978[d]	8.3
Senegal	1986[f]	6.8
Zaire (urban)	1982-4[e]	
Kanaga		7.5
Kinshasa		5.9
Kisangani		5.8
Lubumbashi		6.6
Zimbabwe	1984	6.0

Notes: a: Women aged 15-49;

Sources: d: World Fertility Survey; e: Contraceptive Prevalence Surveys; f: Demographic & Health Surveys; g: other national surveys

The above table is reproduced from The State of African Demography by IUSSP, 1988.

45. With regard to religion in Africa, there is adequate evidence that some religions encourage and support high fertility and tend to discourage use of modern family planning methods. Such opposition from religious groups has been experienced in many countries including Nigeria. Infertility or lower fertility, according to some religions, is associated with punishment for not complying to the need to have many children. Birth of a child is associated in some cultures with the coming back of ancestors. Thus limiting of births would be seen as preventing the ancestors from coming back.

(c) Impact of MCH/FP on Fertility

46. MCH and FP programmes help couples and individuals to space births and to prevent unwanted births. The impact of such programmes if implemented vigourously would be to reduce fertility. The problem is to measure empirically how much change in fertility decline would be due to MCH/FP. It was noted earlier that one of the difficulties in assessing the impact of MCH/FP programmes on fertility is that such programmes do not operate in isolation from other social, economic and cultural factors in influencing fertility. Various research studies on this topic have emphasized this difficulty. There are not many studies, unfortunately, done in Africa on this topic. One of the reasons for this is that in most African countries, fertility has not shown any significant signs of decline. Moreover, very few African countries have had policies with the objective of reducing fertility. Even where policies had been adopted, the objectives were not clearly set and or the policies were not backed by programmes that were strongly implemented. A study on decline in crude birth rate between 1960 and 1977 in 63 dveloping countries observed that large reductions in birth rate took place mainly in countries which adopted policies with specific objectives of reducing fertility and had implemented those policies; the reductions in fertility was explained by the prevalence of contraceptive practice 36). An attempt is therefore made to make qualitative and quantitative observations where it is possible regarding the impact of MCH/FP programmes on fertility on some few countries in Africa and also draw on experiences from Asian countries where a lot more impact studies have been done.

47. MCH/FP through encouraging mothers to breast feed for prolonged periods improve the survival of children which in turn may contribute to reduction of fertility. It has been indicated that for women who breastfeed, prevention of one infant death averts about .35 births in Lesotho (37). In a number of

(36) World Bank, Roberto Cuca, Family Planning Programs: An Evaluationn of Experience, staff working paper No. 345, July 1979, p. 45; see also United Nations Proceedings of the Expert Group on Fertility and Family, New Delhi, 5-11 January 1983, New York 1984, p. 19

(37) World Bank, Cochrane S.H., and K.C. Zachariah, Op.cit.

countries, especially in urban areas, women are no longer breastfeeding as long as they used to in the past and yet most of them are not using contaception. Consequently, they have births at closer intervals. This has an impact of increasing or maintaining fertility at very high levels.

48. An attempt was made in Tunisia to evaluate the impact of family planning programmes on fertility between 1966 and 1975 using standardization method. It was not possible to empirically state how much of the decline in fertility during that period was due to the family planning programme. An increase in age of marriage was said to have been a major factor in fertility decline (38). Family planning programme, however, exerted considerable influence on fertility trends, both directly and indirectly, through mass media education and making available contraceptives. This was complemented with socio-economic and cultural changes (39). Contraceptive use among married women was 3% in 1966 and it rose to 13% in 1976 (40). As shown earlier it reached 49.7% in 1988.

49. In Mauritius attempts had been made to estimate the impact of family planning programmes on fertility using the same methods published in United Nations publications. Hanoomanje, working on the data for the period 1962-1972, concluded that it was difficult to show for Mauritius the effect of family planning programme separately from the influence of socio-economic factors

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(38) Jamai, Yolande and Jamai, Hedi "An Improved Application of Methods of Measuring the Impact of Family Planning Programmes: The Case of Tunisia, 1956-1979", in United Nations, Population Studies No. 76, 1982, p. 223.

(39) Ibid. p. 257

(40) "The Impact of Family Planning Programmes" in Population Reports Series, J. No. 29, January/February 1985, p. 751.

on fertility.(41). However, for the same period, it had been estimated that between 1/3 to 1/2 of fertility decline in Mauritius was due to rising age at marriage. (Median age at marriage was 19.9 years in 1962 and rose to 22.4 in 1972) (42) The rest of fertility decline has been attributed mainly to increased contraceptive use (43). A National Survey conducted in 1975 showed that 46% of ever married women below 50 years were using contraceptives (44).

50. In Kenya, the Family Planning Programme at Chogoria Mission demonstrate the impact it has had on fertility. The programme started in the 1970s. As of 1985 the Mission served an area with 300,000 people. A comparison of contraceptive prevalence and fertility between Kenya as a whole from the 1984 Kenya contraceptive Prevalence Survey and a Survey carried out in 1985 at Chogoria is presented in Table C: below:(45) The strong family planning and health programme at Chogoria is said to be responsible for 70% of the decline in fertility at Chogoria (46). This reinforces the importance of improved health conditions and strengthening

(41) Esther Hanoomanjee, "Application of Methods of Measuring the Impact of Family Planning Programmes on Fertility: The Case of Mauritius" in United Nations Population Studies No. 76, 1982, p. 112.

(42) C. Xenos "Fertility Change in Mauritius and the Impact of Family Planning Programme" 1974, unpublished report prepared for the Ministry of Health; also Government of Mauritius, Five Year Plan for Social and Economic Development 1975-1980, 1976.

(43) W. Brass, "Impact of the Family Planning Programme on Fertility in Mauritius" in IPPF Medical Bulletin 6, No.4, August 1976.

(44) Chatherine R. Hein "Family Planning in Mauritius: A National Survey" in Studies in Family Planning, Vol. 8, No. 12, December 1977, p. 318.

(45) Proceedings of a conference on Community Based Distribution alternative Delivery Systems in Africa, Harare, Zimbabwe, 3-7 November, 1986, pp 96-98.

(46) Ibid.

family planning programmes to reduce fertility as was noted by Phillips Cutright in a study on changes in birth rates between 1960 and 1980 in 83 Asian and Latin American Countries (47).

Table C: Comparision on Contraception & Fertility

Variable	Kenya 1984	Chogoria 1985
Contraceptive Prevalence Rates	17.0%	42.5%
Proportion using any supplied contraceptive method	11.0%	33.5%
Proportion using pills	3.7%	15.7%
Total fertility rate	7.69	4.79

51. Family planning and mother and child health programmes also have an impact on perceptions on family size preference and control of family size. This is well illustrated by the rural family planning project in Ishan in Nigeria between 1969 and 1972 (48). The results indicated that while at the beginning of the project in 1969, 1/4 of married women said they wanted to limit their family size, this figure increased to more than half in 1972. The greatest change was observed among women with 2 or fewer living children. The proportion of such women who wished to limit family size increased from 26% in 1969 to 66% in 1972.

52. Using the satandardization method to the Ghana fertility survey, Gaisie indicated that contraceptive use among women with secondary education or higher education contributed about 30% to

(47) Phillips Cutright, "Ingredients of Recent Fertility Decline in Developing Countries" in International Family Planning Perspectives, Vol. 9, No. 4, December 1983, p. 101.

(48) Ghazi M. Farooq and Lawrence A. Adeokun, "Impact of a Rural Family Planning Programme in Ishan, Nigeria, 1969-1972" in Studies in Family Planning, Vol. 7, No. 6, June 1976.

reduction of fertility; delayed marriage contributed 32% in reducing fertility. The corresponding figures for women with no formal education were 5 and 15% respectively (49).

53. In Egypt, total fertility rate has been declining from around 7 children per woman during 1960-1965 to about 4.7 as of 1988. The level of contraceptive practice reached almost 38% in 1988. Sayed notes that the family planning programme in Egypt shows positive directions regarding its impact on fertility (50). Unfortunately, no empirical data on what portion of fertility decline is due to the family planning programme is available.

54. Examples of impact of health and family planning programmes from other countries outside Africa are considered next. The first case to be presented is from an integrated Health and Family Planning Programme in Etimesgut District in Turkey between 1966 and 1973 (51). In 1973 the area had 65,000 people with half of the area being rural. The programme was oriented on the delivery of integrated health and family planning services using auxiliary nurses, midwives and general practitioners to reduce both mortality and fertility. Each auxiliary nurse/midwife provided antenatal care, delivery and postpartum care, child care and family planning services covering about 2000 people. Home visits were an important aspect of the programme. Medical officers supervised and trained nurses/midwives; they provided medical services and initial family planning services.

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(49) S.K. Gaisie, "Measuring the Impact on Fertility of Family Planning Programmes in Several African Countries: Data Methods and Results" in IUSSP African Population Conference, Dakar 1988, Vol. 1, p. 2.4.21; see also S.K. Gaisie (1984):An Assessment of Contributions of Proximate Determinants to Fertility Levels and Differentials in Ghana: Application of Macro-Tabular and Contextual Frame - works. Paper presented at IUSSP Seminar on integrating Proximate Determinants in Analysis of Fertility and Trends, London.

(50) Hussein Abdel-Aziz Sayed, "Fertility Regulation and Community Programmes in Egypt: The application of Multi-Level Analysis to Assessing the Impact of Egyptian Family Planning Programme" Paper presented at the IUSSP Seminar on the Role of Family Planning Programmes as a Fertility Determinant, Tunis, 26-30 June, 1989.

(51) Nusret Fisek "An Integrated Health/Family Planning Programme in Etimesgut District, Turkey" in Studies in Family Planning, Vol. 5, No. 7, July 1974; also reported on by Robert J. Lapham, Nicholas H. Wright, M.D. and Anna S. Quantdt. "The Influence on Special Mortality Reduction Program on Fertility: An Initial Look at Some Empirical Data and Measurement Problems" in Seminar on Infant Mortality in Relation to the Level of Fertility, 6-12 May 1975.

Supervisory nurses assisted physicians with supervision and co-ordination. By 1973, there was 1 physician per 5,000 population. Both male and female public health nurses were attached to each health unit which served about 3000-9000 people. Another important aspect of the programme was that it was supported by a strong data collection, monitoring and evaluation system.

55. The impact of the progrqmme showed a decline of crude birth rate from 35.1 per 1000 in 1967 to 29.4 in 1973, with most of the decline taking place between 1970 and 1973. Current contraceptive users increased from 50% in 1967 to 54% in 1973. A most important finding was that there was a considerable change between 1967 and 1973 from traditional methods to newer methods of contraception. The integrated health and family planning programme did have an impact on fertility decline. Unfortunately, there is no information on how much of the decline was associated with the project. The decline in fertility in the last four years, though a short period, followed a decline in infant mortality. In this particular case, the finding seem to support the theory that a decline in infant and child mortality and mortality in general is a pre-requisite for fertility decline.

56. In Korea, an attempt was made to estimate births averted through the family planning programme for the period 1963 to 1973 and the results are briefly summarized below (52). Total fertility among women aged 15-44 was observed to have declined from about 6.1 to 4.1 children per woman; this represents a decline of about 32% in 10 years. The family planning programme was said to have been responsible for 37% of the deline in fertility. Contraceptive prevalence among all married women rose from 9% in 1964 to 20% in 1967, 25% in 1971 and 36% in 1973. Socio-economic factors have been given more importance in fertility decline than family planning programmes (53).

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(52) Siew-Ean Khoo and Chai Bin Park, "The Effect of Family Planning Programs on Fertility Decline in Four Asian countries" in International Family Planning Perspectives, Vol. 4, No. 3, Fall 1978, pp 67-73.

(53) L.J. Cho and R.D. Retherford. "Fertility Transition in the Republic of Korea", 1983; also in International Family Planning Perspectives, Vol.8, No. 3, September 1982, p.119

57. In Taiwan total fertility among women aged 15-44 declined from about 6.6 per woman to about 3 per woman between 1964 and 1974; this was about 45% change in 10 years. The family planning programme was attributed to have accounted for about 28% of the decline (54). Contraceptive prevalence among married women aged 20-39 increased from 23% in 1965 to 34% in 1967, 44% in 1970 and 55% in 1973. In Taiwan, as was the case in Korea, socio-economic factors were assigned more importance in influencing fertility decline than family planning programmes (55).

58. A study on impact of family planning programmes on fertility was also carried out on Thailand for the period 1968/69 to 1975 (56). Total fertility among women aged 15-14 had declined from almost 6.0 to 4.3 per woman; this represents a decline of about 28%. It was assessed that 47% of the decline in fertility was due to the family planning programme. By 1975, 37% of all married women aged 15-44 were practising contraception. In Thailand, it has been assessed that the family planning programme has been the prime contributor to the rapid decline in fertility (57). Both the Thai culture and religion, which are liberal towards women, have contributed to change on reproduction behaviour. The culture and religion emphasize individualism, non-confirmity, freedom of action, individual privacy and responsibility. By 1981, current contraceptive use reached 58%.

59. The study in Singapore for the period 1966 to 1975 also shows that a significant contribution in decline in total fertility from almost 4.5 to 2.1 came from the family planning programme. That contribution was estimated at 57% (58). In Kerala State in India, crude birth rate declined from 36 per 1000 in 1966 to 26 per 1000 in 1978. It was estimated that 40% of the decline was due to the family planning programme (59). In

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(54) Siew-Ean Khoo, and Chai Bin Park, Op.cit.

(55) International Family Planning Perspectives, Vol.8, No.3, September 1982, p.119

(56) Siew-Ean Khoo, and Chai Bin Park, Op.cit.

(57) International Family Planning Perspectives,Vol.8, No.2, June 1982, pp.43-51

(58) Siew-Ean Khoo and Chai Bin Park, Op.cit.

(59) International Family Planning Perspectives, Vol.8,No.3, Op.cit, p.119; K.C. Zachariah, Anomaly of the Fertility Decline in Kerala: Social Change Agrarian Reform or the Family Planning Programme? World Bank Discussion paper, No.81, Washington, D.C., 1981.

Malaysia, socio-economic factors were considered to have been major determinants of fertility decline while the family planning programme was playing an important role (60).

60. Finally looking at global studies, it has been acknowledged that both social change and family planning programmes play a positive role in promoting decline in fertility (61). Mauldin and Berelson in their study concluded that socio-economic factors have substantial relationship to fertility decline, however, they also noted that family planning programmes have a significant independent impact over and above the effect of socio-economic factors. They stressed the importance of the social setting and programme effort combined in exerting greater impact (62). In a similar study on fertility decline in 62 countries for the period 1970-1975, Faruqee estimated that 75% of the variance in fertility decline was due to the following 4 factors: (i) level of development (which included variables as percentage of population living in urban areas, per capital G.N.P., life expectancy, crude death rate) accounted for 30%; (ii) Government expenditures (total for health, education and total government consumption) accounted for 17%; (iii) family planning input dimension also accounted for 17%; (iv) actual and potential growth rates of an economy (includes gross domestic investment as percentage of gross domestic product) accounted for 11% of the decline (63).

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(60) Siew-Ean Khoo and Chai Bin Park, Op.cit. p.119; G.W. Jones, Fertility Decline in Peninsular Malaysia, 1983

(61) T. King, Co-ordinating author, Population Policies and Economic Development, Johns Hopkins University Press, 1974; International Family Planning Perspectives, Vol.8, No.3, September 1982, p. 118.

(62) W.P. Mauldin and B. Berelson, "Condition of Fertility Decline in Developing Countries, 1965-1975" in Studies in Family Planning Perspectives, Vol. 8, No. 3, September, 1982, p.118.

(63) R.Faruqee. Sources of Fertility Decline: Factor Analysis of Inter Country Data, World Bank staff working paper No. 318. Washington D.C., February 1979; International Family Planning Perspectives, Vol.8, No.3, September 1982, p.118.

IV. INFANT AND CHILD MORTALITY AND MATERNAL HEALTH

(a) Levels and Trends in Infant and Child Mortality

61. According to United Nations 1988 population assessment, infant mortality has declined from a level of 187 per 1000 births in the early 1950s to 106 per 1000 at present. This represents a reduction of about 43%. A further decline is expected depending on improvements in socio-economic development, health, family planning programmes and environmental preservation. As shown in Table D below, Africa has the highest infant mortality rates in comparison with other regions of the world. Current infant mortality rate in Africa is about seven times that of the more developed regions. On subregional basis, Eastern and Western Africa currently have the highest infant mortality rates. The lowest rates are found in Southern and Northern Africa.

Table D: Infant mortality rate per 1000 births in Africa in comparison with more developed and developing regions 1950-1955 to 1985-90

Area	1950-1955	1985-1990
Eastern Africa	179	116
Middle Africa	183	107
Northern Afriaca	189	86
Southern Africa	153	77
Western Africa	204	112
Total Africa	187	106
World	155	71
More developed regions	56	15
Less developed regions	180	79

Source: United Nations, World Population Prospects, 1988, medium variant, 1989.

62. On individual country level, infant mortality rates are about 100 per 1000 births in some countries in Africa. Results from the Liberia 1986 Demogrqaphic and Health Survey, for example, indicate that infant mortality was about 144 per 1000 births, 5 years prior to the survey. Similar recent surveys for some of the other countries give the following infant mortality rates 5 years prior to the survey date given in parenthesis: Burundi 75 (1987); Mali 108 (1987); Senegal 86 (1986); Morocco 73 (1987); Tunisia 50 (1988). Some of these figures were preliminary estimates so they should not be regarded as final especially in the case of Tunisia. Data in Table E shows trends in mortality among infants and children under 5 years among some of the countries which had taken part in the World Fertility survey according to years preceeding the date of the survey.

There is evidence that both infant and child mortality declined during the 20 year period prior to the surveys in all the 9 countries in Table E.

Table E: Trend in Infant and Child Mortality (Probability of death per 1000 births) in some African Countries based on WFS Data

Country	Date of Survey	Mortality Index	Years prior to the Survey 0-4	5-9	10-14	15-19
Benin	1981-82	1q0	107.6	136.3	138.5	171.1
		5q0	204.2	250.8	254.3	289.7
Cameroon	1978	1q0	105.6	102.8	134.7	133.5
		5q0	195.0	193.8	242.5	240.7
Cote D'Ivoire	1980-81	1q0	113.1	147.5	164.5	174.9
		5q0	172.0	231.3	253.4	290.7
Egypt	1980	1q0	132.3	145.6	140.8	151.2
		5q0	190.6	238.0	243.4	282.6
Ghana	1979	1q0	73.5	74.6	88.7	85.9
		5q0	127.4	132.0	160.0	153.0
Mauri-tania	1981-82	1q0	90.2	83.7	79.9	105.4
		5q0	195.9	181.1	166.3	217.0
Morocco	1980	1q0	91.2	101.6	102.6	121.5
		5q0	141.8	160.6	180.0	207.0
Nigeria	1981-82	1q0	90.0	90.8	109.6	108.7
		5q0	166.1	160.7	204.9	209.6
Tunisia	1978	1q0	80.3	75.7	78.9	110.5
		5q0	108.5	130.0	141.2	195.2

Source: International Statistical Institute, Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demographic Differentials. Comparative Studies No. 43 (Table A1).

(b) Factors Affecting Infant and Child Mortality

63. There are many factors that are related to cause of infant and childhood mortality and morbidity. These include: diseases, malnutrition, low birth weight, early and late child bearing, spacing of births, inadequacy of medical care services and facilities. It should be pointed out that there is paucity of data on specific causes of death in Africa either from medical records or surveys. Therefore, there is no need to go into details explaining the various causes.

64. Among the various specific diseases that are related to causes of death among infants and children include measles, anaemia, malaria, pnenmonia, diarrhoea, tentanus, respiratory diseases, etc. The prevalence of each of these varies from country to country. Data from Zanzibar hospital in 1986 and a survey in Sine-Saloum Region in Central-Western Senegal in 1982-1983 is presented in Table F. Malaria causes more than 1/3 of death among children in Zanzibar. In the case of Sine-Saloum, diarrhoea and respiratory diseases each is responsible for more than 1/5 of deaths among children under 5 years. Use of oral rehydration therapy (ORT) was rare to control and treat diarrhoea in Sine-Saloum. Tafari has noted that infections and malnutrition are major sources of childhood morbidity and mortality with acute respiratory infections, diarrheoa and advanced protein-energy malnutrition being the three killers in Ethiopia. He further observed that complications of labour and delivery account for about half of newborn deaths (63). Demographic Health Surveys conducted in some African countries show the following prevalence of diarrhoea among children under 5 years, 2 weeks before the survey: (64) Burundi 1987, 16% (includes some children aged 5); Liberia 1986, 45% (based on 4 weeks before the survey); Ondo State, Nigeria, 1986-87, 5%; Senegal 1986, 37%; Morocco 1987, 29%; Mali 1987, 35%.

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(63) Nebiat Tafari, MD, "Health and National Problems and Their Impact on Maternal Child Mortality in Ethiopia" paper presented at a National Conference on Population Issues in Ethiopia's National Development, 20-22 July 1989, organized by the Population and Development Planning Unit of the Office of the National Committee for Central Planning, Addis Ababa, p. 28.

(64) Demographic and Health Surveys Newsletter, Winter and Summer issues of 1988, Westinghouse, Columbia, USA.

65. Both malnutrition and low birth weight contribute to death among children as these weaken body immunities against diseases. Table 2 in the Annex shows the prevalence of malnutrition among children under 5 years and infant low birth weight for the period 1980-1985 respectively. The proportions with moderate to severe malnutrition is high in some countries. In Ethiopia, it is 70% and 30% or more in many countries. For the world as a whole, malnutrition is reported to have contributed 1/3 to child death in 1987.(65) With regards to low birth weight, it is observed that in many African countries 10 to 25% of infants experience low birth weight as shown in Table 2. In 1986, UNICEF estimated that 14% or 3.6 million infants in Africa had low birth weight, i.e. birth weight of less than 2500 grammes.(66). Unfortunately,

Table F: Percentage Distribution of some causes of Death Among Children Under 5 Years

Cause of death	Zanzibar Hospitals (a) 1986	Sine - Saloum (b) 1982 - 1983
Malnutrition	6.7	
Measles	6.2	7.0
Anaemia	12.0	
Malaria	36.2	9.1
Pneumonia	17.5	
Diarrhoea	3.2	23.9
Tentanus	2.4	5.4
Respiratory Diseases		23.1

Source: (a) Joop Gaissen "Levels of Infant Mortality in Zanzibar, some results from the 1987 Pilot Survey on Fertility and Mortality" in Research and Intervention Issues Concerning Infant and Child Mortality and Health, Proceedings of the East African Workshop, August 1988, IDRC.

(b) Howard 1. Goldberg and Fara G. M'bodji "Infant and early childhood mortality in Sine-Saloum Region of Senegal" in Journal of Biosocial Science, Vol. 20, No.4, October 1988, p.479.

(65) UNICEF, State of the World's Children, 1988.

(66) UNICEF, State of the World's Children, 1987, p.116

the proportions suffering from malnutrion and low birth weight are increasing in some countries according to UNICEF.(67).

66. Age of mother has a relation to the level of infant and childhood mortality. Data in Tables 3,4 and 5 show in general that infant and child mortality are highest among mothers under 20 years and above 39 years. However, due to data quality and small numbers, there are exceptions especially in table 5. Table G below shows relative infant mortality taking age 20-29 as the comparison group = 100. Excess infant mortality among women aged under 20 ranged from 13% in Tunisia to 58% in Morocco four years prior to surveys. Excess infant mortlality among women aged above 39 was as high as 100% in Nigeria. Data on Mortality

Table G: Relative Infant Mortality Among Women Age Under 20 and 40+, using age 20-29=100.

Country	Under age 20	20-29	40+
Benin	131	100	157
Cameroon	138	100	154
Côte D'Ivoire	143	100	100
Egypt	148	100	127
Ghana	152	100	179
Mauritania	121	100	153
Morocco	158	100	110
Nigeria	127	100	201
Tunisia	113	100	183

Source: Derived from Table 3 in the Annex

among children between 1 and 5 years, (4q1) and children under 5 years (5q0) by mothers age (Table 4 and 5) also give similar impressions but not as consistent as that on infant mortality in relation to mothers age.

67. In a study based on WFS data in 34 countries, Hobcraft in his analysis showed that a birth to a teenage mother was 24% more likely to die in the first month of life than to a child to a mother 25-34 years. This excess mortality was estimated at 37% for the remainder of the first year and 33% in early childhood (2-5 years)(68). Various studies have reported higher rates of low birth weights, prematurity, neonatal and infant mortality among young mothers than among women 20-29 years old (69).

(67) Ibid. p. 91

(68) John Hobcraft, "Does Family Planning Save the Children's Lives?" August 1987. Technical background paper prepared for the International Conference on Better Health for Women and Children Through Family Planning, Nairobi, Kenya, 5-9 October 1987.

(69) Population Reports Series, M, No. 9, November - December 1989, p. 366.

68. Table 6 in the Annex and Table H show the relationship between infant mortality and birth order. It is observed that infant mortality rates are lowest among birth orders 2 to 3. Using Table H where birth orders 2 to 3 is base = 100, excess mortality is clearly shown to be highest among first birth orders and 7th and over birth orders with some few inconsistencies in some of the data. In Mauritania, there is excess mortality of 44% among first order births and 80% among birth order of 7 and over in comparison with birth order of 2 to 3. Those reporting first order births are mostly under age 20 while those reporting birth orders 7 and over are aged 35 and over. Birth order and mortality among children betwen 1 and 4 and children under 5 (Tables 7 & 8 in the Annex) do not show a consistent relationship as that on infant mortality rate. Hobcraft in his analysis of WFS data on 34 countries indicated that excess infant morality to first order births in comparision with birth orders 2-6 was 62% while birth orders of 7 and over show an excess mortality of 21% (70).

69. In Table 9 in the Annex, it is shown that infant mortality is highest where birth interval for children whose next oldest sibling survived to the date of their birth was less than 24 months; it was lower where birth interval was 24-27 and 48 months and over. Table 10 on birth intervals with regard to mortality between 1 and 4 years shows a similar relationship as that on infant mortality except for Mauritania where mortality is lower for birth interval of less than 24 months and 48 months and over which have similar mortality and higher for birth interval of 24-47 months. This anormaly is probably a reflection of poor data quality. Table 11 on birth interval and mortality among children under 5 years also shows a similar relationship where mortality is highest among birth interval of less than 24 months followed by birth interval of 24-47 months and 48 months and over. Here again Mauritania data is an exception with mortality being higher for birth intervals of 24-47 than birth interval of less than 24 months. Relative mortality for children under 5 years among birth intervals of less than 24 months and 48 months based on birth intervals of 24-47 months = 100 is presented in Table I. It is noted that mortality among children under 5 years is highest where birth interval is less than 24 months, lowest where birth interval is 48 months and over. A possible explanation for this excess mortality where birth interval is less than 24 months is related to the fact that short birth interval is associated with under weight births as mothers may not have recovered adequately to give normal weight births. More over the children do not benefit as much from breast feeding to develop immunities. Thus they easily get exposed to diseases and die. Longer birth interval ensures that a mother breast feeds her child for a long period and recover her health before the next pregnancy.

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(70) John Hobcraft, 1987, op.cit.

Table H: Relative infant mortality rate with 2nd to 3rd birth order as base (=100), four years before the survey.

Country	Birth Order			
	1	2 to 3	4 to 6	7+
Benin	112	100	108	156
Cameroon	131	100	91	109
Cote D'Ivoire	159	100	101	122
Egypt	104	100	102	135
Ghana	134	100	116	124
Mauritania	144	100	101	180
Morocco	110	100	74	102
Nigeria	94	100	106	138
Tunisia	104	100	81	188

Source: Derived from Table 6 in Annex.

Table I: Relative Mortality Among Children Under 5 Years by Birth Interval (Birth Interval 24-47 months = 100) 0-4 years prior to the survey

Country	Birth Interval		
	Less than 24 months	24-47 months	48 months +
Benin	110	100	77
Cameroon	153	100	93
Côte D'Ivoire	114	100	55
Egypt	179	100	54
Ghana	166	100	93
Mauritania	95	100	76
Morocco	143	100	80
Nigeria	123	100	84
Tunisia	188	100	61

Source: Derived from Table 11 in the Annex.

70. Inadequacy of health services, facilities, personnel and family planning programmes, is one of the causes of high infant and child mortality. In Sudd in Southern Sudan, for example, the one hospital in the area as of 1984 is not accessible for at

least 8 months of the year during the wet season. Women who had 4 to 5 living children had lost about 4 children in pregnancy, delivery or early childhood (71). Information from Korle - Bu Teaching Hospital in Ghana for the period 1980-1983 show that 24% of the mothers did not have their children immunized because of lack of vaccine; 20% said they were not aware of the need; 10% said the place for immunication was too far (72). The situation referred to in Sudan and Ghana are also true in most African countries. Where the health services are not free, the majority of the population who are poor can not afford to have access to them. This itself contributes to high infant and child mortality.

(c) Impact of MCH/FP on Infant and Child Mortality

71. It has been shown earlier that infant and child mortality in Africa is very high. Some of the various causes related to infant and child mortality and morbidity have been briefly discussed. MCH/FP programmes can have a significant impact to reduce some of the causes related to infant and child mortality and morbidity and consequently, increase the survival chances for children. Such intervention would include immunization, maternal and child care through visits to clinics, family planning activities on spacing births. Some evidence of impact of MCH/FP programmes on some of these aspects is dealt with next.

72. Immunization and vaccination of children against the various diseases and infections is generally low in Africa as can be seen in Table J for 12 month-old children in 1986 in comparison with developed countries. Immunization against DPT, polio and measles among 12 month-old children ranged from 34% to 38% in Africa in 1986 while corresponding figures for developed countries were 71% to 79%. Increased coverage of immunization and antibiotic treatment as part of the MCH programmes would reduce respiratory infections which is one of the killer diseases among children as it was shown earlier in the case of Sine-Saloum in Senegal where over 1/5 of children were reported to have died from respiratory diseases. It was also noted in the case of Sine-Saloum that diarrhoea killed a similar proportion of children and that there was little use of oral rehydration

(71) Bouchier, V.A. "Maternity Care in the Sudd, Southern Sudan" in Tropical Doctor 14 (1) 1984, pp. 32-33.

(72) D.A. Ampofo, Maternal - Child Health and Family Planning in Ghana, (Population Impact Project on Ghana) no date.

therapy which can easily control and reduce mortality among children. It has been shown that immunization, rickets, diarrhoea control and nutrition programmes contributed to decline in infant mortality from 108 per 1000 births in 1976 to 40 per 1000 in 1982 in Cheraga, a section of greater Algiers, while child mortality declined from 11.9 per 1,000 to 1.7 per 1,00 during the same period (73). MCH programmes, through educational promotions of better feeding of children would go a long way to improve the nutrition of the children and hence contribute to reduction of infant and child mortality. In the case of the integrated health and family planning in Etimesgut Project in Turkey which was referred too earlier, the programme contributed to the reduction of infant mortality from 142 per 1,000 births in 1967 to 93 per 1,000 in 1973, this is a decline of about 1/3 during that time. In Togo, the family planning and health services of the National Family Welfare Programme have contributed considerably to reduction of infant and child mortality in the last 20 years.

Table J: Immunization of 12 Month-old Children in 1986 (%)

	TB(BCG)	DPT	Polio	Measles
Africa	49	34	36	38
Developed Countries	61	71	79	79

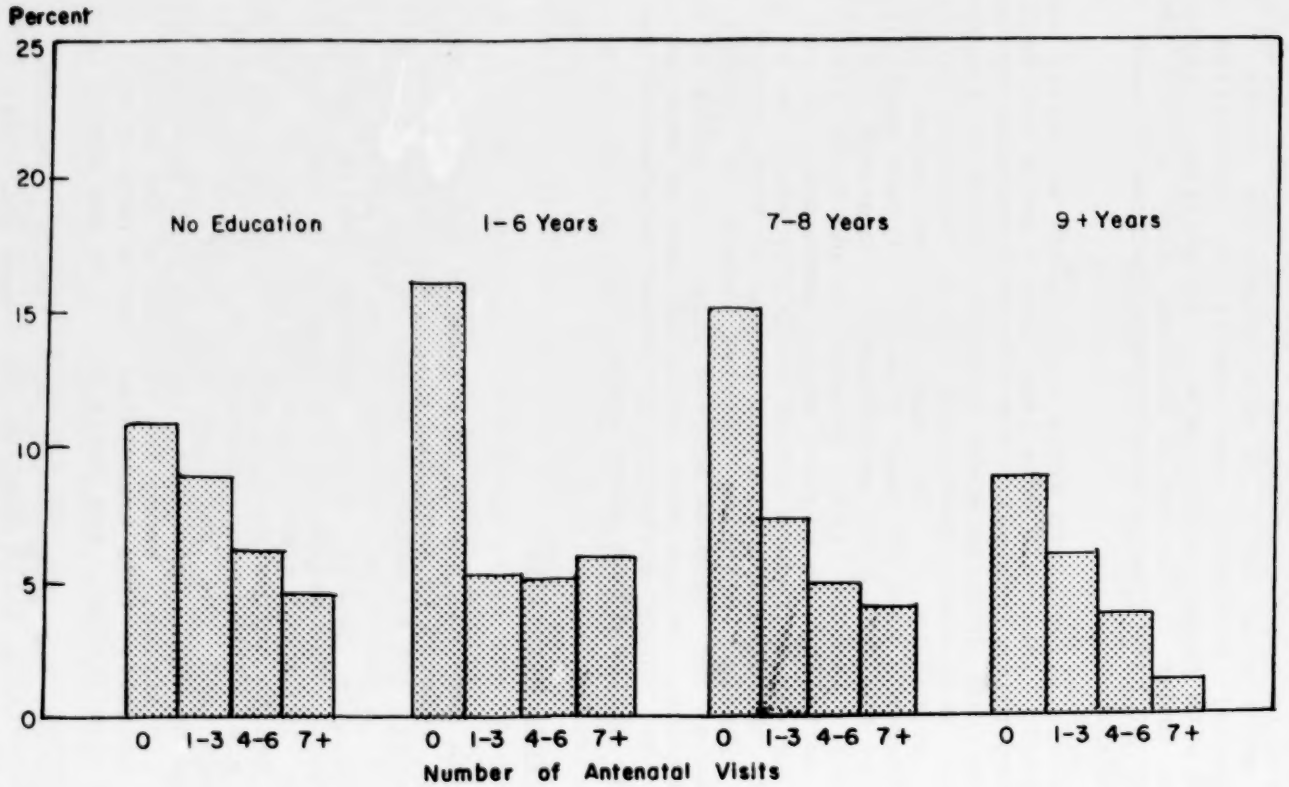
NB: DPT is diphtheria, pertussis (whooping cough) and tetanus
TB (BCG) is tuberculosis

Source: UNICEF, The State of The World's Children 1988, p. 15.

73. Antenatal and postnatal care has a significant role in improving the survival chances and improving the health of children. MCH programmes educate women on advantages of frequent visits to health centres during these visits. Problems related to the birth of a child among pregnant women can be anticipated early and action taken to enable successful outcome. The more antenatal visits are made, the better chances for child survival. This is demonstrated by figure 1 on Ghana where significant proportion of infants born to mothers who did not make any antenatal visit to health centres died soon after birth before the mother was discharged. The study was done at Korle-Bu Hospital and data refers to the period 1981-1982. The number

(73) Grangaud J.P.; Mazouni SM; Laraba N; Belkhenchir D; Belhocine Z; Kermani S. "Combating Malnutrition in a sector of Greater Algiers - the Health Team's Possibilities and Limitations" in Assignment Children, 63/64, 1983.

Figure 1. PERCENT OF INFANTS DYING BEFORE MOTHER'S DISCHARGE FROM HOSPITAL, BY EDUCATION AND NUMBER OF ANTENATAL VISITS, ACCRA, GHANA



Source: Reproduced from: Reproductive Health in Africa: Issues and Options, by Family Health International, 1984

of infant deaths decreases with the increase in number of antenatal visits. Figure 1 does not show the impact of education on child survival as one would expect. Constant visits for under 5 children to health centres as part of the MCH services enables better monitoring of child development and growth. Those who need special attention can easily be identified early and provided with proper health care. In addition, periodic visits for the under 5 to health centres also afford chances for children to have the necessary immunizations on such visits if necessary.

74. It was illustrated above that infant mortality was highest where birth intervals were less than 2 years and declined with increasing birth interval. MCH and FP programmes by encouraging, educating and helping women to space births at intervals of 2 years or more could contribute to the reduction of infant and child mortality. It has been estimated that if all birth intervals were at least 2 years, infant mortality would be reduced by the following percentages: Cameroon 22%, Ghana 17%, Kenya 20%, Lesotho 12%, Senegal 5% and Sudan 19% (74). Since infant mortality is highest among women under 20 and above 39 years, one way to reduce infant mortality would be to avoid early and late childbearing at these groups of high infant mortality risk. Family planning servies would be needed to help individuals and couples achieve this. In parts of Europe and North America, it has been indicated that as much as 1/4 of the decline in infant mortality in recent decades was due to fewer and fewer births among older women (75).

(d) Maternal Mortality

75. High maternal deaths in Africa is one of the serious health problems related to reproduction. Estimates show that Africa contributes 30% to maternal deaths in the world. Unfortunately there is a dearth of information on the extent of problems as most of the deaths occur outside health centres and go unrecorded. The extent of the problem is even more difficult to estimate in rural areas where the majority of the population live. Health infrastructure and services in most of these rural areas are either non-existent or if they exist they are inadequate and the services are poor. However, available estimates by WHO, upto 1984, indicate that maternal mortality is highest in Africa, among the regions of the world, at 150,000 deaths annually; this translates into a rate of 640 deaths per 100,000 live births, see Table K. On the world level, half a

(74) Centre for Population and Family Health, Columbia University Birth Spacing and Child Survival, 1987, New York, p.17.

(75) Population Reports (Healthier Mothers and Children Through Family Planning) Series J.27, May - June 1984.

million women die annually of child bearing. Maternal mortality rates for other regions are: Asia 420, Latin America 270, all developing countries 450, all developed countries 30, and the world as a whole 390. Africa's maternal mortality rate is a little over 20 times than of all the developed countries.

Table K: Estimates of Maternal Mortality by Region

Region	Number of Maternal Deaths '000	Maternal Mortality Rate (per 100,000 live births)
Africa	150	640
North Africa	24	500
West Africa	54	700
East Africa	46	660
Central Africa	18	690
Southern Africa	8	570
Asia	308	420
Latin America	34	270
Developing Countries	494	450
Developed Countries	6	30
World	500	390

Source: WHO in Preventing the Tragedy of Maternal Deaths, A Report of the International Safe Motherhood Conference, Nairobi, Kenya February 1987.

76. Within Africa, maternal mortality rates are highest in Western Africa (700) and lowest in Northern Africa (500). On country level, wherever estimates are available, rates are extremely high in some of the countries as shown in Table 2 in the Annex. Rates are above 1,000 in Benin, Burkina Faso, Ghana, Nigeria and Somalia. Few countries have rates of less than 100, these include Egypt, Libya, Mauritius and Togo. For some countries there are no estimates available on national level. As noted above, data on maternal mortality in Africa is not complete and not reliable. This possibly explains the wide variation of rates shown in Table 2 among different countries. Hence, the figures that have been used should be considered as a rough indication of the magnitude of the problem on maternal mortality.

77. Maternal mortality is highest among pregnancies in the following groups (i) pregnancies before age 18; (ii) pregnancies after age 35; (iii) pregnancies after 4 or more children and (iv) pregnancies spaced less than 2 years apart. A study in Sierra Leone in 1982 at the country's largest maternity hospital showed

that half of maternal deaths during the period of the study were among women aged 15-17 years (76). In Nigeria, it has been shown that women younger than 15 years are 4 to 8 times more likely to die during pregnancy and child birth than women 15-19 years (77). In another study in Nigeria, it was found that women age 15 had a maternal mortality rate 7 times that of women aged 20-24 years (78).

(e) Causes of Maternal Mortality and Morbidity

78. In developing countries, about 20-45% of all deaths among women in childbearing years are due to maternal deaths; this compares with less than 1% in the United States of America. Generally, women's low status and poverty, high fertility and lack of access to essential health care are the root causes of maternal mortality. The inadequacies of health care is reflected in the fact that in Africa, the percentage of women giving birth that are assisted by trained health worker is only 34%. This compares with 100% in North America (79). However, the immediate causes of about 75% of maternal deaths in developing countries are caused by one of the five obstetric complications: haemorrhage, obstructed labour, infection, eclampsia and abortion (80).

79. Haemorrhage is difficult to predict and requires treatment within two hours at a health facility to provide blood transfusion and other treatment in order to save a woman's life. Obstructed labour also requires immediate treatment at a health facility that can perform operative delivery. Sepsis or infection

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(76) International Family Planning Perspectives, Vol.12, No.1 March 1986, p.30

(77) Population Reports, Series M, No.9, November-December 1985, Op.cit, p.365

(78) Harrison, K.A., "Childbearing, Health and Social Priorities" in British Journal of Obstetrics and Gynaecology, Supplement No.5, 1985; see also World Bank, WHO, and UNFPA. Fact Sheet prepared for the International Safe Motherhood Conference in Nairobi, Kenya February 1987.

(79) World Bank, WHO, UNFPA, Fact Sheet prepared for the International Safe Motherhood Conference, Nairobi, February 1987.

(80) International Safe Motherhood Conference 1987, Op.cit, pp.18, 21.

generally arise from poorly performed abortions; however, it is also caused by prolonged labour or when a woman's membranes have raptured and she has not delivered within twenty-two hours. Immediate antibiotic treatment is necessary to prevent serious infections. Eclampsia is caused by a condition of high blood pressure which can lead to convulsions. Eclampsia can lead to death if not treated early. Prenatal care can lead to its early identification and its complication prevented. Abortions are illegal in most African countries. However, they are still performed illegally under unsafe methods and environment to women who do not want pregnancy. Most such abortions are done outside health facilities. They lead to serious haemorrhage and infections and lead to death if not taken to hospital soon. Among some of the problems associated with childbearing among young women - teenagers, include pregnancy high blood pressure, iron deficiency, and cephalopelvic disproportion. Data from Korle-Bu Teaching Hospital in Accra, show the following distribution of some of the causes of maternal mortality during 1981-1985/(81): anaemia 12%, septic abortion 13%, elampsia 18%, puerperal, sepsis 9%, obstructed labour 16%, peripatum Haemorrhage 24%, ectopic pregnancy 8%.

80. Abortion causes serious social and health problems in African countries. Many pregnancies are terminated through illegal abortion as abortion is not allowed by law; moreover, the women do not have access to modern family planning methods to prevent unwanted pregnancies. A Pathfinder Fund Project in Nigeria on early childbearing found out that the majority of pregnant adolescent females elected to terminate their pregnancies (82). The decision to abort among school girls is prompted by the fact that pregnant girls are not allowed to continue with their studies. In 1981, for example, 60% of the 1,489 patients treated for complications largely from illegal induced abortions at John F. Kennedy Memorial Medical Care in Monrovia, Liberia, were teenagers enrolled in school (83). A study conducted in Addis Ababa covering 9,315 pregnant women, estimated maternal mortality at 566 per 100,000 births. Abortion was said to be the major cause of death. Septic abortion accounted for about 54% of direct obstetric deaths; illegal abortion accounted for 92% of the cases. Mortality was highest among nullipara, the unmarried, women employed as maids and

(81) D.A. Ampofo: Maternal, Child Health and Family Planning in Ghana, Op.Cit, p.2.

(82) Edmunds, M; Paxman, J.M. "Early Pregnancy and Childbearing in Guatalmala, Brazil, Nigeria and Indonesia: Addressing the Consequencies". In Pathfinder Fund, 1984.

(83) Republic of Liberia, Ministry of Health and Social Welfare, Hospital Admissions 1981, Monrovia Government Printing Office, 1982.

students (84). Abortion however, is not only confined to the young unmarried women. A study carried out in Lagos, Nigeria, showed that 30.4% of septic abortions occurred to women above age 25; 34.8% of the abortees were married women, and 52.2% had 2 or more children (85). Tafari also noted with regard to Ethiopia that all age groups of women are affected by abortion deaths and that the unmarried school-age girls are over represented (86). All these indicate the need for family planning that could help women prevent the unwanted pregnancies. It has already been shown that the proportion of women using contraception in most African countries is very low. Most of the statistics on abortion refer to urban areas and there is virtually no information on that in rural areas where the problem on abortion also exists.

(f) Impact of MCH/FP on Maternal Mortality and Morbidity

81. It has been noted above that maternal mortality is highest among pregnancies to young women below age 18; pregnancies to women above age 35, pregnancies after 4 or more children; and pregnancies spaced less than 2 years apart. It has also been pointed out that both young unmarried and married women resort to illegal abortion in order to terminate unwanted pregnancies for lack of access to family planning services. MCH/FP programmes through promotional and educational information, counselling and provision of means for women to space, regulate and or limit child bearing can considerably help reduce abortions, and consequently pregnancies that would otherwise be associated with maternal deaths and morbidity. An attempt is made to give some examples on the impact of MCH/FP to reduce maternal mortality.

82. The need for family planning is well known in some countries as shown in Table L. In Egypt, for example, 54% of the women aged 15-49 did not want more children; of these only 46% were using an effective contraceptive method. About 28% of all maternal death would be prevented in Egypt if all women who want no more children but are not using an effective method of contraception were to use an effective method. In the other countries, the percentage of maternal deaths that would be prevented through use of effective methods of contraception are: Ghana 15%, Côte d'Ivoire 5%, Kenya 15%, Lesotho 18%, Nigeria 8%, Sudan 15% and Tunisia 27%. (See Table L)

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(84) Barbara E. Kwast, Roger W. Rochat and Widad Kidane Mariam, "Maternal Mortality in Addis Ababa, Ethiopia" in Studies in Family Planning, Vol. 17, No. 6, Part 1, November/December 1986.

(85) Olukoya A.A. "Pregnancy Termination: Results of a Community-Based Study in Lagos, Nigeria, 1987, in International Gynaecology and Obstetrics, 25, 1:41-46.

(86) Nebiat Tafari, MD. op.cit. p. 27.

Table L : Percentage of women wanting no more children, and using effective contraceptive method, and percentage of future maternal deaths that could be avoided if all women wanting no more children but were not using effective method were to use an effective method.

Country	Percentage of women (a) 15-49 who say they want no more children	Percentage of women aged (b) 15-49 wanting no more children and are using an effective method of contraception	Percentage of maternal deaths that would be prevented if all future births were avoided by women wanting no more children but are not using effective contraceptives
Egypt	54	46	28
Ghana	12	17	15
Côte d'Ivoire	4	4	5
Kenya	17	17	15
Lesotho	15	15	18
Nigeria	5	4	8
Sudan	17	16	15
Tunisia	47	48	27

(a) Currently married, fecund women

(b) Exposed women

Source: Maine, D. et.al "Prevention of Maternal Deaths in Developing Countries : Options and Practical Consideration" paper prepared for the International Safe Motherhood Conference, Nairobi, February 1987.

83. Figure II shows graphically the percentage of maternal deaths that would be avoided if all married focund women wanting no more children but are not using an effective contraceptive method were to use an effective method and maternal deaths that would be averted if, in addition, women aged 35 years and over had no more births. The combination of the two would prevent more than 40% of maternal deaths in Egypt, Ghana, Tunisia, Kenya and Sudan. Access to family planning services would contribute to reduce illegal abortions as a method of preventing unwanted pregnancies. In Tunisia where abortion was legalized for medical reasons in 1966 and then ammended in 1973 to allow abortion on request during the first trimester, it has been noted that this has contributed to reduction of maternal morbidity and mortality (87).

84. Family planning counseling with regard to prenatal care, especially among the young has been observed to significantly reduce pregnancy related mortality and complications. With reference to Nigeria, a study showed that death rate among mothers 14 years or younger who had received good prenatal care was 500 per 100,000 births where as the rate among women of the same age who received no care was 4,300 per 100,000 births (88). In a similar study, again in Nigeria, at Zaria, it was observed that those who had received prior antenatal care had far lower maternal mortality than those who had not received such care (89). Apart from young mothers under 14, it has been found that women who had antenatal care had risk of maternal death that was 25-50% below that of the overall rate for the lowest risk age/parity group (90). There is an inverse relationship between infant mortality, maternal mortality and morbidity on the one hand and antenatal visits to health centres on the other. With regard to complications of labour and delivery among women with grand multiparae, data from Korle-Bu Hospital between 1981 and 1982 showed the following percentages of complications in relation to the number of antenatal visits: no antenatal visit 40%, 1-3 visits 36.1%, 4-6 visits 31.3% and 7 visits and mover 24% (91). It is therefore important to have health care easily accessible to the people and encourage the people to use them.

(87) People, Vol.15, No.3, 1988, p.12.

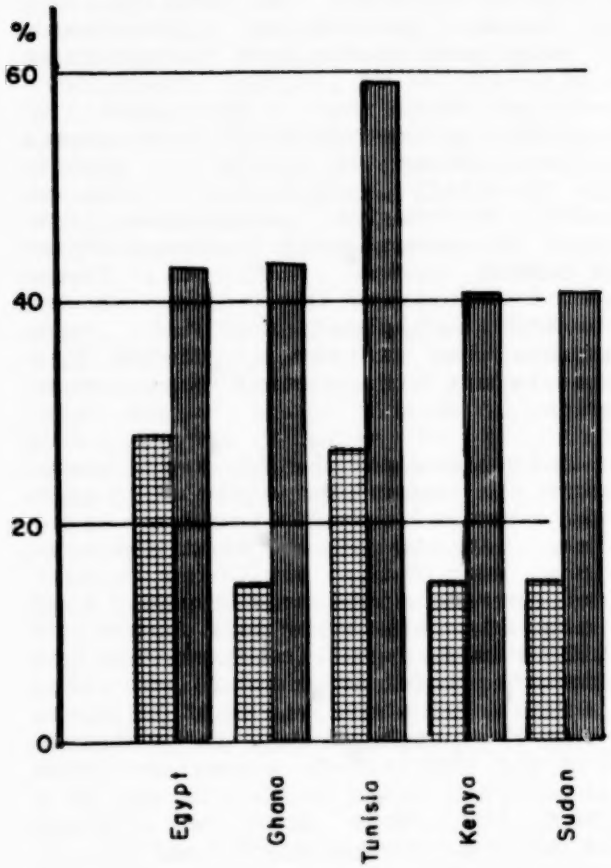
(88) Population Reports, Series M. No.9, November/December 1985, p.365.

(89) Beverly Winikoff and Maureen Sullivan, "Assessing the Role of Family Planning in Reducing Maternal Mortality" in Studies in Family Planning, Vol. 18, No.3, May/June 1987.

(90) Ibid. p. 141

(91) Family Health International, 1984, op.cit. pp. 14-15.

Figure II. PERCENTAGE OF MATERNAL DEATHS POTENTIALLY PREVENTABLE THROUGH FAMLY PLANNING



Maternal Deaths Averted if all Women with "Un Met Need"* had no More Pregnancies

Maternal Deaths Averted If, In Addition, Women Aged 35 and Over Had no more Pregnancies

* Married Fecund Women Who Want No More Children but are not Using an Effective Contraceptive Method

Source: Preventing the Tragedy of Maternal Deaths, A report on the International Safe Motherhood Conference, Nairobi Kenya, Feb. 1987

V. SUMMARY AND POLICIES FOR CONSIDERATION

(a) Summary

85. It has been pointed out that concern for the health of the mother and child is one of the main reasons for government programmes on MCH/FP and that many governments are integrating these programmes to maximize utilization of limited resources. Some governments are also concerned about the high fertility levels which have repurcussions on socio-economic development and they would like to lower their fertility rates. MCH/FP programmes can have an impact on fertility, infant and childhood mortality and maternal health if these programmes are implemented vigourously and cover the majority of the population in pursuit of the objective of health care for all. There are not many studies that have been carried out on impact of MCH/FP programmes on infant and childhood mortality and maternal health in Africa, however, some scattered evidence does exist, giving indications of the impact though the measurement of impact is difficult and complex.

86. Total fertility has remained above 6 children per woman since the early 1950s. Factors that are responsible for high fertility include: social and cultural values towards early marriages and large family size; little or no contraceptive use; erosion of cultural values supporting prolonged breast feeding and sexual abstinence for nursing mothers; religion; high infant and child mortality rate; low education and status of women. MCH/FP programmes can help reduce fertility for women who want no more pregnancies by providing information and education on methods of achieving this. Similarly, those who want to space births can be helped through MCH/FP programmes. In addition MCH/FP can help the infertile and sub-fecund women to have children. While reduction of infant and child mortality may be a necessary factor to reduce fertility, this does not happen automatically. In the case of Africa, significant decline in infant and child mortality has been noticed since the 1950s and yet it has not, on continent level, been followed by comparable decline in fertility. Changes in social and cultural values regarding family size would be an added factor as well as improvements in socio-economic development.

87. Though MCH/FP programmes definitely have an impact on reduction of fertility, its impact varies from country to country depending on the strength of the programme. In some countries in Asia, it has been noted that the family planning programme was the major factor contributing to fertility decline while in others it was the socio-economic development that had more weight. In the case of Africa, it was indicated that the evaluation of the family planning programme in Tunisia had a considerable impact in reducing fertility but it was not possible to quantify the impact. Similar difficulties were

experienced in evaluation of the Mauritius family planning programme. The example from Kenya at Chogoria Mission showed that the strong health and family planning programme in the area served by Chogoria mission was responsible for 70% of the decline in fertility. MCH/FP programmes do have, in some cases, immediate impact in changing attitudes towards smaller family size, however, lack of means to achieve smaller families becomes the main problem. Several recent studies have indicated that a considerable portion of women would like to regulate their fertility or limit their fertility.

88. Regarding infant mortality, though the level has declined by about 43% since the early 1950s, the level at 106 per 1000 births for Africa is the highest in the world. Child mortality is also the highest. Causes of infant and childhood mortality include diseases, malnutrition, low birth weight, early and late childbearing, close spacing of births and inadequacy of medical care and servides. Infant mortality is highest to mothers under age 20, mothers above age 35, to children born less than 2 years apart, and to higher order births. MCH/FP programmes can have a significant impact to reduce infant and child mortality and consequently increase the chances of survival of children. The intervention would include wide scale immunization, encouraging mothers and children to visit health centres periodically, providing maternal and child health care services, educating mothers on nutrition aspects, providing family planning services and encouraging women to space births at least 2 years apart, and to avoid child bearing at early and old ages.

89. Evidence from Ghana showed that the number of infant deaths decreased with the increase in number of antenatal visits to health centres. Spacing of births at intervals of 2 years or more could contribute to reduction of infant and child mortality. Birth intervals of 2 years or more reduce infant mortality by 22% in Cameroon, 20% in Kenya, 12% in Lesotho and 19% in Sudan.

90. As was the case with fertility, infant and childhood mortality, Africa experiences the highest maternal mortality rate in the world, i.e. about 640 deaths per 100,000 live births. This rate is over 20 times that of the developed countries. Women's low status and poverty, high fertility and lack of access to essential health care are the root cause of maternal mortality and morbidity. However, the immediate causes of about 75% of maternal deaths in developing countries are the following five obstetric complications: haemorrhage, obstructed labour, infection, eclampsia, and abortion. Both haemorrhage and obstructed labour require immediate treatment at a health facility to save a woman's life and that of the child. Eclampsia leads to death if not treated early. Abortions are generally not allowed by law; they are undertaken illegally and their prevalence is increasing due to lack of family planning services. Both married and unmarried women, young and old women do resort to illegal abortions most of which result into serious

complications and deaths. Many cases of abortion complications are taken to health centres very late when little or nothing can be done to save the woman's life. These illegal abortions reflect the need for family planning to avoid unwanted pregnancies. The social and economic effects of pregnancy among young school girls is very serious in that it ruins their education opportunities and hence their chances for better employment.

91. Maternal mortality is highest among pregnancies to young women below age 18; pregnancies to women above age 35; pregnancies after 4 or more children; and pregnancies spaced less than 2 years apart. MCH/FP programmes through antenatal visits to clinics enable a woman improve the chances of a better outcome of her pregnancy as any anticipated problems may be identified and attended to timely. Data from Ghana supports that the more antenatal visit a woman makes, the greater the chances for a woman to survive through pregnancy and delivery.

92. Family planning services through encouraging women to have births at longer intervals of at least 2 years as well as encouraging women to have children between ages 18 and 35 reduces a significant portion of pregnancies some of which would have been associated with maternal mortality. In addition, FP programmes would help those who want to space and/or limit their fertility. It has been seen that a significant portion of women in some countries want to space or limit their fertility. Thus provision of family planning services, methods and means would prevent the unwanted pregnancies. It has been shown that in some countries over 40% of maternal deaths would be prevented if (a) those who want no more children and are not using an effective contraceptive methods were to use an effective method and (b) if those aged 35 years and above were to have no more children. Birth spacing of 2 years or more enables a mother to recover her health properly before the next pregnancy. It also help proper development of the children.

(b) Policies for consideration

93. There is no dispute that MCH/FP programmes have an impact on fertility, infant and child mortality and maternal health. Various conferences, including the Colloquium on Information, Education, Communications and Family Planning in Africa, organized by the Union for African Population Studies UAPS, in Dakar, in November/December, 1988; the Colloquium on the Impact of Family Planning Programmes in Sub-Saharan Africa, organized by the Regional Institute for Population Studies (RIPS) in Accra in April 1989; and the IUSSP Seminar on the Role of Family Planning Programmes as a Fertility Determinant, held in Tunis in June 1989, have all stressed the need to improve the effectiveness of MCH/FP programmes. Various recommandations have emanated from a number of meetings, seminars, workshops on the subject. An attempt is made to stress some policies for consideration by national governments in Africa and those involved in provision of MCH/FP programmes.

94. Although many countries now accept the usefulness of MCH/FP progammes and have policies on these programmes, there is need for strong leadership and commitment. There is also need to review existing policies and that the policies should be backed by provision of adequate financial resources for their implementation. Special consideration in the policies should be to meet the MCH/FP needs of the majority of the rural population who are generally neglected in the provision of health and family planning services. The primary health care approach offers a framework of reaching the population at the grassroot in the rural areas.

95. Policies to improve the health of mothers and children and the population in general require to strengthen the health information system with particular emphasis on preventive health measures. Prevention of child and maternal morbidity and mortality would save governments tremendous financial and material resources. It is in this light that one hears the saying that prevention is better than cure. Some of the specific preventive measures would include: Providing the population with clean drinking water and means for proper waste desposal; provision of adequate food; education on proper nutrition; encouraging women to avoid early marriages, early child bearing before age 18 and after age 35, and births at close intervals; providing family planning services and supplies to those who need them as this would even help reduce cases of abortions.

96. Policies on spacing births as well as those to help individuals limit their family size should provide information, education and communication (IEC) services on methods as well as the availability of various supplies. Where the policies advocate child spacing and/or controling of family size, the legal aspects should be reviewed to ensure that the law supports the policies being advocated and not contradict them. Information, education and communication activities should be geared towards both men and women. The design of communication messages should involve the participation of the local people to ensure their success. The policies should ensure that IEC programmes also serve the needs of young girls and boys. Thus population education should be part of the carriculum in schools. Formal education beyond primary for women and improvement in their status should be considered as essential component for inclusion in policies designed to influence fertility, child and maternal health.

97. It is essential that MCHFP programmes have adequate and strong management capabilities at the top of the organizational structures. This should be supported by trained personnel involved in the implementation of the programmes at various levels. Policies without strong management capabties and trained personnel to implement programmes have no chances of succeeding.

98. Policies have specific objectives to be attained at a given time period. Regarding policies on MCH/FP programmes to influence fertility, birth spacing, infant and child mortality and maternal health, there is need to have specific targets well formulated and mechanisms for data collection, monitoring and evaluation of the programmes. The policies should explicitely include such aspects. Evaluations have an important role in assessing the effectiveness of the policies and programmes and provide information that could lead to reformulation of the policies or to take corrective action to improve the impact the policies and programmes. There is need to have trained personnel to be involved in programme evaluation and adequate funds should be made available in the MCH/FP programmes for evaluation and related research.

99. Finally, it is important that MCH/FP programmes should be part of the over all socio-economic developoment policy and should be integrated into the other sectors of development. There is no way that MCH/FP programmes can operate in isolation from socio-economic development and succeed in their objectives.

ANNEX TABLES

Table 1: Fertility trends where estimates on total fertility are available for at least 2 points in time based on censuses, surveys or vital events registration

Subregion and Country	Year	Total Fertility	Source
Eastern Africa			
Burundi	1970-71	6.1	c
	1979	6.4	c
	1987	7.0	e
Ethiopia	1980-81	6.9	c
	1984	6.9	d
Kenya	1976-78	8.1	c
	1979	8.1	c
	1984	7.7	1984 contraceptive prevalence survey
Malawi	1971-72	6.7	c
	1977	6.6	c
	1982	7.6	g
Mauritius	1972	3.4	c
	1983	2.2	c
	1985	2.0	c
Mozambique	1970	6.2	c
	1979-80	6.5	c
Rwanda	1970	7.5	c
	1978	8.9	c
	1983	8.4	c

Subregion and Country	Year	Total Fertility	Source
Seychelles	1970	5.6	c
	1975	5.1	c
	1980	4.2	c
	1985	3.3	c
Uganda	1959	5.9	c
	1969	6.8	c
	1980	6.6	c
Tanzania (Mainland)	1972-73	5.6	c
	1978	6.9	c
Zambia	1969	6.9	c
	1974	6.7	c
	1980	5.7	c
Zimbabwe	1969	7.8	Unpublished Masters of Arts Thesis
	1982	5.6	c
	1984	6.5	1984 Reproductive Health Survey
	1988	5.7	DHS preliminary report
Southern Africa			
Botswana	1971	6.5	c
	1981	6.2	c
	1984	6.5	1984 Botswana Family Health Survey
	1988	5.0	e
Swaziland	1966	5.2	c
	1976	5.7	c

Subregion and Country	Year	Total Fertility	Source
Western Africa			
Cote d'Ivoire	1978-79	6.5	c
	1980-81	7.4	c
Gambia	1973	6.4	c
	1983	6.4	d
Ghana	1968	6.6	b
	1971	6.2	b
	1977-80	6.3	b
	1988	6.4	e (provisional)
Liberia	1971	5.7	c
	1974	6.7	b
	1986	6.5	e
Mali	1960-61	7.4	c
	1987	7.1	e
Mauritania	1964-65	5.7	c
	1981	6.2	WFS
Nigeria	1970-73	5.7	c
	1981-82	6.3	c
Senegal	1976	6.4	d
	1978	7.2	c
	1986	6.6	e
Togo	1971	5.6	c
	1981	5.6	d

Subregion and Country	Year	Total Fertility	Source
Middle Africa			
Cameroon	1960-62	4.6	c
	1975-78	6.4	c
Congo	1960-61	5.2	c
	1974	5.3	c
North Africa			
Algeria	1970	7.9	c
	1977	7.4	c
	1982	6.8	a
	1986	5.4	f
Egypt	1970	5.3	c
	1973	5.2	c
	1978	5.3	c
	1984	4.7	a
Libya	1959	6.8	c
	1973	8.3	c
Morocco	1971	7.4	d
	1972-73	6.9	c
	1976-80	5.9	c
	1987	4.9	e
Sudan	1973	6.8	b
	1979	6.9	c
Tunisia	1970	6.2	b
	1980	5.4	b
	1981	5.2	b
	1984	5.0	a
	1988	4.3	e

Sources: For (a) source is United Nations, Preliminary Report on World Population Trends: 1987 Monitoring Report.

For (b) the source is United Nations Economic Commission for Africa, Second African Population Conference, Country Statements, Vol. 3.

For (c) the source is United Nations Economic Commission for Africa, Demographic and Related Socio-Economic Data Sheets for ECA member States, 1986.

For (d) the source is ECA, Report of the Regional Training Workshop on Demographic Estimates and Projections in Africa, Accra, Ghana, 15-29 July 1985.

For (e) source is Demographic and Health Surveys (DHS) Newsletter, Summer 1988, Winter 1988, Winter 1989.

For (f) Kouaouci, "Fecondite au Nord du Sahara, une Application du modele Bongaarts", in IUSSP African Population Conference, Dakar 1988, Vol.1.

For (g) Malawi Government, NSO, Malawi Demographic Survey 1982, 1987.

Table 2 : Statistics on the Maternal Mortality, Contraceptive prevalence & Malnutrition

Country	Maternal Mortality Rate 1980-84	Contraceptive Prevalence % 1981-85	Infants with low Birth rate % 1982-85	% Children under 5 in 1980 - 86 with	
				Mild — Moderate Malnutrition	Severe Malnutrition
(1)	(2)	(3)	(4)	(5)	(6)
Algeria	129	7	9	..	..
Angola	..	1	19	..	..
Benin	1680	20	10	..	..
Botswana	300	29	8	31	..
Burkina Faso	1500	1	21	..	..
Burundi	850	1	14	30	5
Cameroon	141	3	13	..	..
Central Africa Republic	600	..	23	..	..
Chad	..	1	11	..	..
Congo	..	..	15	30	..
Côte D'Ivore	..	3	14	..	..
Egypt	80	30	7	46	..
Ethiopia	..	2	13	60	10
Gabon	124	..	16	..	..
Ghana	1074	10	17	23	7
Guinea	..	1	18	..	..
Guinea-Bissau	400	..	15	..	..
Kenya	168	17	13	30	2
Lesotho	..	5	10	..	..
Liberia	..	1	..	31	4
Libya	80	..	5	..	..
Madagascar	300	..	11	..	..
Malawi	250	1	10	30	..
Mali	..	1	13	..	..
Mauritania	..	1	10	30	10
Mauritius	52	75	9	17	7
Morocco	327	27	9	40	5
Mozambique	300	..	15	..	..
Niger	420	1	20	17	9
Nigeria	1500	5	25	24	..
Rwanda	210	10	17	29	8
Senegal	530	4	10	20	..
Sierra Leone	450	4	14	24	3
Somalia	1100	..	..	16	..
Sudan	..	5	15	33	8

Country	Maternal Mortality Rate 1980-84	Contraceptive Prevalence % 1981 - 85	Infants with low Birth Rate % 1982-85	% Children under 5 in 1980 - 86 with	
				Mild - Moderate Mulnutrition	Severe Mulnutritition
(1)	(2)	(3)	(4)	(5)	(6)
Tanzania, U.Rep. of	370	1	14	43	7
Togo	84	..	20	..	..
Tunisia	..	42	7	60	4
Uganda	300	1	10	15	4
Zaire	800	1	20	15	5
Zambia	109	1	..	..	..
Zimbabwe	145	40	15	..	..

N.B. Data on some of these statistics were made available through field staff and should be treated with caution. Low birth weigh: (i.e. 2,500 grammes or less) Mild or moderate malnutrition i.e. between 60% and 80% of desirable weight-for - age; Severe: less than 60% of the desirable weight - for-age Contraceptive prevalence - based on married women aged 15-44 who were currently using contraceptive.

Source : United Nations Children's Fund, The State of the World's Children 1988.

Table 3 : Infant mortality (1q0) by age of mother at birth, 0-4 years prior to survey

Country	Years of Survey	Age of Mother			
		Under 20	20-29	30-39	40+
Benin	1981-82	133.2	101.8	99.0	(159.9)
Cameroon	1978	129.9	94.1	99.4	(145.2)
Cote D'Ivoire	1980-81	145.1	101.3	107.2	(101.7)
Egypt	1980	183.4	124.3	116.2	(157.6)
Ghana	1979	98.8	64.8	63.9	(116.3)
Mauritania	1981-82	99.6	82.0	92.6	(125.7)
Morocco	1980	133.0	84.4	82.7	(92.5)
Nigeria	1981-82	100.5	79.1	96.5	(158.7)
Tunisia	1978	(84.0)	74.5	75.4	(136.3)

N.B. : Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source : International statistical Institute:
Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demographic Differentials WFS Comparative studies No. 43,December 1984. (Complied from Appendix Table A2)

Table 4 : Mortality among children between 1 and 5 years ($4q_1$) by age of mother at birth, 0-4 years prior to the survey

COUNTRY	Year of Survey	Age of Mothers			
		Under 20	20-29	30-39	40
Benin	1981-82	(119.2)	(105.1)	110.2	(100.2)
Cameroon	1978	105.0	93.8	101.8	(128.9)
Côte D'Ivoire	1980-81	79.7	64.2	54.0	(86.5)
Egypt	1980	72.5	66.0	67.3	(56.6)
Ghana	1979	57.5	57.5	52.8	(99.8)
Mauritania	1981-82	95.5	116.0	128.6	(189.6)
Morocco	1980	74.6	54.6	53.4	(27.4)
Nigeria	1981-82	75.6	77.5	91.8	(219.0)
Tunisia	1978	(18.0)	29.8	33.3	(38.9)

N.B. Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source: International Statistical Institute: Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends, and Demographic Differentials, WFS Comparative Studies No. 43, December 1984 (compiled from Appendix Table A2)

Table 5: Mortality among children under 5 years (5q0) by age of mother at birth, 0-4 years prior to the survey

Country	Years of Survey	Age of Mother			
		Under 20	20-29	30-39	40+
Benin	1981-82	(236.5)	196.1	198.3	(244.1)
Cameroon	1978	221.2	179.1	191.1	(255.4)
Côte D'Ivoire	1980-81	213.3	159.0	155.4	(179.4)
Egypt	1980	242.6	182.1	175.7	(205.3)
Ghana	1979	150.7	118.5	113.3	(204.4)
Mauritania	1981-82	185.1	188.5	209.3	(291.5)
Morocco	1980	197.7	134.3	131.6	(117.4)
Nigeria	1981-82	168.4	150.4	179.5	(342.9)
Tunisia	1978	(100.5)	102.1	106.2	(169.9)

N.B. Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source : International Statistical Institute:
Shea Oscar Rutstein, Infant and Child Mortality, Levels, Trends and Demographic Differentials WFS Comparative Studies No. 43, December 1984 (Complied from Appendix Table A2.)

Table 6 : Infant mortality (1q0) by birth order, 0-4 years prior to the survey

Country	Year of Survey	Birth Order			
		1	2 to 3	4 to 6	7+
Benin	1981-82	105.7	94.6	101.8	147.2
Cameroon	1978	131.6	100.7	91.7	110.1
Côte D'Ivoire	1980-81	154.0	97.0	98.0	118.3
Egypt	1980	127.6	122.8	125.7	165.3
Ghana	1979	84.8	63.5	73.9	78.8
Mauritania	1981-82	104.9	72.7	73.1	130.7
Morocco	1980	106.0	96.4	70.9	97.9
Nigeria	1981-82	78.8	84.2	89.3	116.0
Tunisia	1978	73.1	70.5	57.2	132.4

Source : International Statistical Institute: Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demographic Differentials. WFS Comparative Studies No. 43 December 1984 (complied from Appendix Table A4).

Table 7 : Mortality Among Children between 1 and 5 years ($4q_1$) by birth order, 0-4 years prior to the survey

Country	Year of Survey	Birth Order			
		1	2-3	4-6	7+
Benin	1981-82	104.4	111.8	109.4	(102.9)
Cameroon	1978	93.0	90.9	100.6	126.2
Côte D'Ivoire	1980-81	70.4	72.9	55.2	68.6
Egypt	1980	44.7	72.8	73.5	70.5
Ghana	1979	58.6	48.7	60.7	74.2
Mauritania	1981-82	87.5	111.1	111.8	(164.9)
Morocco	1980	49.6	71.4	53.4	46.3
Nigeria	1981-82	58.2	79.1	96.3	99.9
Tunisia	1978	15.8	29.3	35.6	37.0

N.B. Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source: International Statistical Institute: Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demographic Differentials, WFS Comparative Studies, No. 43, December 1984, (compiled from Appendix Table A4.)

Table 8 :Mortality among children under 5 years (5q0) by birth order, 0 - 4 years prior to the survey

Country	Years of Survey	Birth Order			
		1	2 - 3	4 - 6	7+
Benin	1981-82	199.0	195.9	200.1	(235.0)
Cameroon	1978	212.4	182.4	183.1	(222.5)
Côte D'Ivoire	1980-81	213.5	162.8	147.7	178.8
Egypt	1980	166.6	186.6	190.0	224.2
Ghana	1979	138.4	109.0	130.1	147.2
Mauritania	1981-82	183.2	175.7	176.7	(274.0)
Morocco	1980	150.4	160.9	120.5	139.7
Nigeria	1981-82	132.5	156.6	177.0	204.3
Tunisia	1978	87.8	97.8	90.7	164.5

N.B. Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source : International Statistical Institute: Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demorgraphic Differentials, WFS comparative Studies No. 43, December 1984 (complied from Appendix Table A4).

Table 9 :Infant mortality (1q0) by birth interval for children whose next oldest sibling surv ved to the date of their birth, 0 - 4 years prior to the survey

Country	Year of Survey	Birth interval		
		Less 24 months	24 - 47 months	48 months +
Benin	1981-82	101.7	90.5	(72.1)
Cameroon	1978	127.0	69.2	65.5
Côte D'Ivoire	1980-81	95.4	92.9	(55.5)
Egypt	1980	167.3	92.6	51.6
Ghana	1979	111.5	51.5	61.5
Mauritania	1981-82	89.4	69.7	(49.9)
Morocco	1980	107.4	67.6	(52.5)
Nigeria	1981-82	97.6	71.3	45.7
Tunisia	1978	102.9	55.4	(27.8)

N.B. Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source : International Statistical Institute: Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demographic Differentials, WFS Comparative Studies No. 43, December 1984 (Complied from Appendix Table A5).

Table 10 :Mortality among children between 1 and 5 years ($4q_1$) by birth interval for children whose next oldest sibling survived to the date of their birth, 0-4 years prior to survey

Country	Year of Survey	Birth Interval		
		24 months	24-47 months	48 months +
Benin	1981-82	(119.3)	109.6	(80.0)
Cameroon	1978	123.8	90.3	82.9
Côte D'Ivoire	1980-81	85.2	64.4	(28.6)
Egypt	1980	115.3	59.9	28.8
Ghana	1979	74.1	58.1	40.2
Mauritania	1981-82	100.9	130.8	(100.5)
Morocco	1980	63.6	51.0	(41.8)
Nigeria	1981-82	85.4	75.8	76.8
Tunisia	1978	51.4	25.2	(21.4)

N.B. Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source: International Statistical Institute: Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demographic Differentials, WFS Comparative Studies No. 43, December 1984 (Compiled from Appendix Table A5).

Table 11 : Mortality among children under 5 years (5q0) by birth interval for children whose next oldest sibling survived to the date of their birth, 0-4 years prior to the survey.

Country	Years of Survey	Birth Interval		
		Less 24	24-47	48 months +
Benin	1981-82	(208.8)	190.2	(146.4)
Cameroon	1978	235.0	153.3	142.9
Côte D'Ivoire	1980-81	172.5	151.3	(82.5)
Egypt	1980	263.3	147.0	78.9
Ghana	1979	177.3	106.7	99.3
Mauritania	1981-82	181.3	191.3	(145.4)
Morocco	1980	164.1	115.1	(92.1)
Nigeria	1981-82	174.6	141.7	119.0
Tunisia	1978	149.0	79.2	(48.6)

N.B. : Parentheses indicate that at least one of the relevant sub-intervals had less than 500 children exposed.

Source : International Statistical Institute: Shea Oscar Rutstein, Infant and Child Mortality: Levels, Trends and Demographic Differentials, WFS comparative studies no. 43 (Compiled from Appendix Table A5). December, 1984

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